



1547759_1.TXT

SEQUENCE LISTING

<110> Klein, Michael
Schultz, Dennis

<120> Gene Mutation Associated with
Age-Related Macular Degeneration

<130> 49321-117

<140> 10/766,760

<141> 2004-01-27

<150> 60/443,214

<151> 2003-01-27

<160> 186

<170> FastSEQ for windows Version 4.0

<210> 1

<211> 18206

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (230)...(17137)

<221> variation

<222> (14197)...(14197)

<223> A and G allelic variation exists at this position

<221> variation

<222> (17811)...(17811)

<223> C and T allelic variation exists at this position

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ccaagagtct gatgagttac tctgagagga aaccctctgc ctgttggtga ggaggactga 180
gcacagtgtc taggcgctga gggggaaaaa gagggggaaa aaaaagaaa atg att tcc 238
Met Ile Ser
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tgg gaa gtt gtc cat aca gta ttc ctg ttt gct ctt ctt tat tct tcc 286
Trp Glu Val Val His Thr Val Phe Leu Phe Ala Leu Leu Tyr Ser Ser
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cta gct caa gat gcg agc ccc cag tca gag atc aga gct gag gaa att 334
Leu Ala Gln Asp Ala Ser Pro Gln Ser Glu Ile Arg Ala Glu Glu Ile
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ccc gag ggg gcc tcc acg ttg gct ttt gtg ttt gat gtg act ggt tct 382
Pro Glu Gly Ala Ser Thr Leu Ala Phe Val Phe Asp Val Thr Gly Ser
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Met Tyr Asp Asp Leu Val Gln Val Ile Glu Gly Ala Ser Lys Ile Leu
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gtg Val 85	cct Pro	ttc Phe	cat His	gat Asp	cca Pro	gaa Glu 90	att Ile	ggc Gly	cca Pro	gtg Val	aca Thr 95	att Ile	acc Thr	aca Thr	gat Asp	526
ccc Pro 100	aag Lys	aaa Lys	ttt Phe	caa Gln	tat Tyr 105	gaa Glu	ctc Leu	aga Arg	gaa Glu	ctg Leu 110	tat Tyr	gtt Val	cag Gln	ggg Gly	ggg Gly 115	574
ggg Gly	gat Asp	tgc Cys	cca Pro	gaa Glu 120	atg Met	agt Ser	att Ile	gga Gly	gct Ala 125	ata Ile	aaa Lys	att Ile	gcc Ala	ttg Leu 130	gaa Glu	622
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cag Gln 165	tca Ser	caa Gln	gtc Val	gta Val	ttt Phe	gtt Val 170	ctg Leu	act Thr	gga Gly	gat Asp	tgt Cys 175	gat Asp	gac Asp	agg Arg	acc Thr	766
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gta Val	gaa Glu	gaa Glu	gca Ala 215	gta Val	cag Gln	gcc Ala	tcc Ser	aaa Lys 220	gtt Val	cac His	ctt Leu	tta Leu	tcc Ser 225	aca Thr	gat Asp	910
cat His	ttg Leu	gaa Glu 230	cag Gln	gct Ala	gta Val	aat Asn	act Thr 235	tgg Trp	aga Arg	att Ile	cct Pro	ttt Phe 240	gat Asp	ccc Pro	agc Ser	958
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325 330 335																
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340 345 350 355																
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390 395 400																
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485 490 495																
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550 555 560																
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Glu	Gly	Gly	Ser	Ser	Ala	Ala	Ser	Val	Phe	Leu	Thr	Val	Gln	Glu	Pro				
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ccc	aaa	gtc	act	gtg	atg	ccc	aag	aat	cag	tct	ttc	aca	gga	ggg	tct				2110
Pro	Lys	Val	Thr	Val	Met	Pro	Lys	Asn	Gln	Ser	Phe	Thr	Gly	Gly	Ser				
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gcc	tgg	acc	gtt	aac	gat	atg	ttt	atc	gtg	ggg	tca	cac	agg	tat	agg				2206
Ala	Trp	Thr	Val	Asn	Asp	Met	Phe	Ile	Val	Gly	Ser	His	Arg	Tyr	Arg				
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Met	Thr	Ser	Asp	Gly	Thr	Leu	Phe	Ile	Lys	Asn	Ala	Ala	Pro	Lys	Asp				
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gca	ggg	atc	tat	ggg	tgc	cta	gca	agt	aat	tca	gct	gga	aca	gat	aaa				2302
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Gln	Asn	Ser	Thr	Leu	Arg	Tyr	Ile	Glu	Ala	Pro	Lys	Leu	Met	Val	Val				
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Gln	Ser	Glu	Leu	Leu	Val	Ala	Leu	Gly	Asp	Ile	Thr	Val	Met	Glu	Cys				
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Leu	Leu	Lys	Ile	Gln	Glu	Thr	Gln	Asp	Leu	Asp	Ala	Gly	Asp	Tyr	Thr				
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tgt	gta	gcc	atc	aat	gag	gct	gga	aga	gca	act	ggc	aag	ata	act	ctg				2590
Cys	Val	Ala	Ile	Asn	Glu	Ala	Gly	Arg	Ala	Thr	Gly	Lys	Ile	Thr	Leu				
			775					780					785						
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Asp	Val	Gly	Ser	Pro	Pro	Val	Phe	Ile	Gln	Glu	Pro	Ala	Asp	Val	Ser				
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Met	Glu	Ile	Gly	Ser	Asn	Val	Thr	Leu	Pro	Cys	Tyr	Val	Gln	Gly	Tyr				
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ctc Leu	ttt Phe	att Ile	tta Leu 855	aac Asn	tta Leu	tgg Trp	gca Ala	agt Ser 860	gat Asp	aaa Lys	gga Gly	acc Thr	tat Tyr 865	att Ile	tgt Cys	2830
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ctg Leu 980	cca Pro	acc Thr	att Ile	cag Gln	cat His 985	ggg Gly	cag Gln	cag Gln	ata Ile	ctc Leu 990	agt Ser	aca Thr	att Ile	gaa Glu	ggc Gly 995	3214
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gtc Val	atc Ile	tgg Trp	tcc Ser	aag Lys 1015	aaa Lys	gga Gly	gag Glu	ctg Leu 1020	att Ile	tca Ser	acc Thr	agc Ser	agt Ser 1025	gct Ala	aag Lys	3310
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gag Glu 1045	gag Glu	agt Ser	ggg Gly	gag Glu	tat Tyr	gtc Val 1050	tgc Cys	act Thr	gcc Ala	acc Thr	aat Asn 1055	aca Thr	gcc Ala	ggc Gly	tac Tyr	3406
gcc Ala 1060	aaa Lys	agg Arg	aaa Lys	gtg Val	cag Gln 1065	cta Leu	aca Thr	gtc Val	tat Tyr	gta Val 1070	agg Arg	ccc Pro	aga Arg	gtg Val	ttt Phe 1075	3454

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acc cgc act tca gat agt ggg atg tat ctt tgt gtt gcc aca aat att Thr Arg Thr Ser Asp Ser Gly Met Tyr Leu Cys Val Ala Thr Asn Ile 1140 1145 1150 1155	3694
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Glu Arg Lys Tyr Asn Leu Lys Val His Val Pro Pro Val Ile Lys Asp	
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aaa gaa caa gtt aca aat gtg tcg gtg ttg tta aat cag ctg acc aat	4366
Lys Glu Gln Val Thr Asn Val Ser Val Leu Leu Asn Gln Leu Thr Asn	
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ctc ttc tgt gaa gtg gaa ggc act cca tct ccc atc att atg tgg tat	4414
Leu Phe Cys Glu Val Glu Gly Thr Pro Ser Pro Ile Ile Met Trp Tyr	
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Asn Gly Lys Ile Leu Lys Leu Phe Arg Ala Thr Pro Glu Asp Ala Gly	
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Phe Asn Ile Asp Val Leu Val Pro Pro Thr Ile Ile Gly Thr Asn Phe	
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Lys Pro Leu Phe Leu Gly Asp Pro Asn Val Glu Leu Leu Asp Arg Gly	
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Gln Cys Thr Val Ser Asn Ala Ala Gly Lys Gln Ala Lys Asp Ile Lys	
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Leu Thr Ile Tyr Asn Pro Pro Ser Ile Lys Gly Gly Asn Val Thr Thr	
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gac ata tca gta ttg atc aac agc ctt att aaa ctg gaa tgt gaa aca	4942
Asp Ile Ser Val Leu Ile Asn Ser Leu Ile Lys Leu Glu Cys Glu Thr	
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Arg Gly Leu Pro Met Pro Ala Ile Thr Trp Tyr Lys Asp Gly Gln Pro	

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gta gcc aat gtt gct gga act gct gaa aaa tca ttc cat gtg gat gtc Val Ala Asn Val Ala Gly Thr Ala Glu Lys Ser Phe His Val Asp Val 1620 1625 1630 1635			5134
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caa gta gtt att gct cat tct ctg aca ctg gag tgc aaa gct gct gga Gln Val Val Ile Ala His Ser Leu Thr Leu Glu Cys Lys Ala Ala Gly 1655 1660 1665			5230
aac cct tct ccc att ctc acc tgg ttg aaa gat ggt gta cct gtg aaa Asn Pro Ser Pro Ile Leu Thr Trp Leu Lys Asp Gly Val Pro Val Lys 1670 1675 1680			5278
gct aat gac aat atc cgc ata gaa gct ggt ggg aag aaa ctc gaa atc Ala Asn Asp Asn Ile Arg Ile Glu Ala Gly Gly Lys Lys Leu Glu Ile 1685 1690 1695			5326
atg agt gcc caa gaa att gat cga gga cag tac ata tgc gtg gct acc Met Ser Ala Gln Glu Ile Asp Arg Gly Gln Tyr Ile Cys Val Ala Thr 1700 1705 1710 1715			5374
agt gtg gca gga gaa aag gaa atc aaa tat gaa gtt gat gtc ttg gtg Ser Val Ala Gly Glu Lys Glu Ile Lys Tyr Glu Val Asp Val Leu Val 1720 1725 1730			5422
cca cca gct ata gaa gga gga gat gaa aca tct tac ttc att gtg atg Pro Pro Ala Ile Glu Gly Gly Asp Glu Thr Ser Tyr Phe Ile Val Met 1735 1740 1745			5470
gtt aat aac tta ctg gag cta gat tgt cat gtg aca ggc tct ccc cca Val Asn Asn Leu Leu Glu Leu Asp Cys His Val Thr Gly Ser Pro Pro 1750 1755 1760			5518
cca act atc atg tgg ctg aag gat ggc cag tta att gat gaa agg gat Pro Thr Ile Met Trp Leu Lys Asp Gly Gln Leu Ile Asp Glu Arg Asp 1765 1770 1775			5566
gga ttc aag att tta tta aat gga cgc aaa ctg gtt att gct cag gct Gly Phe Lys Ile Leu Leu Asn Gly Arg Lys Leu Val Ile Ala Gln Ala 1780 1785 1790 1795			5614
caa gtg tca aac aca ggc ctt tat cgg tgc atg gca gca aat act gct Gln Val Ser Asn Thr Gly Leu Tyr Arg Cys Met Ala Ala Asn Thr Ala 1800 1805 1810			5662
gga gac cac aag aag gaa ttt gaa gtg act gtt cat gtt cct cca aca Gly Asp His Lys Lys Glu Phe Glu Val Thr Val His Val Pro Pro Thr 1815 1820 1825			5710
atc aag tcc tca ggc ctt tct gag aga gtt gtg gta aaa tac aag cct			5758

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Ile	Lys	Ser	Ser	Gly	Leu	Ser	Glu	Arg	Val	Val	Val	Lys	Tyr	Lys	Pro		
		1830					1835					1840					
gtc	gcc	ttg	cag	tgc	ata	gcc	aat	ggg	att	cca	aat	cct	tcc	att	aca	5806	
Val	Ala	Leu	Gln	Cys	Ile	Ala	Asn	Gly	Ile	Pro	Asn	Pro	Ser	Ile	Thr		
	1845					1850					1855						
tgg	tta	aaa	gat	gac	cag	cct	gtg	aac	act	gcc	caa	gga	aac	ctt	aaa	5854	
Trp	Leu	Lys	Asp	Asp	Gln	Pro	Val	Asn	Thr	Ala	Gln	Gly	Asn	Leu	Lys		
1860					1865					1870					1875		
ata	cag	tct	tct	ggt	cga	gtt	cta	caa	att	gcc	aaa	acc	ctg	ttg	gaa	5902	
Ile	Gln	Ser	Ser	Gly	Arg	Val	Leu	Gln	Ile	Ala	Lys	Thr	Leu	Leu	Glu		
				1880					1885						1890		
gat	gct	ggc	aga	tac	aca	tgt	gtg	gct	acc	aac	gca	gct	gga	gaa	aca	5950	
Asp	Ala	Gly	Arg	Tyr	Thr	Cys	Val	Ala	Thr	Asn	Ala	Ala	Gly	Glu	Thr		
			1895					1900					1905				
caa	cag	cac	att	caa	ctg	cat	gtt	cat	gaa	cca	cct	agt	ctg	gaa	gat	5998	
Gln	Gln	His	Ile	Gln	Leu	His	Val	His	Glu	Pro	Pro	Ser	Leu	Glu	Asp		
		1910					1915					1920					
gct	gga	aaa	atg	ctg	aat	gag	act	gtg	ttg	gtg	agc	aac	cct	gta	cag	6046	
Ala	Gly	Lys	Met	Leu	Asn	Glu	Thr	Val	Leu	Val	Ser	Asn	Pro	Val	Gln		
	1925					1930					1935						
ctg	gag	tgt	aag	gca	gct	gga	aat	cct	gtg	cct	gtt	att	aca	tgg	tac	6094	
Leu	Glu	Cys	Lys	Ala	Ala	Gly	Asn	Pro	Val	Pro	Val	Ile	Thr	Trp	Tyr		
1940					1945				1950						1955		
aaa	gat	aat	cgt	cta	ctc	tca	ggt	tcc	acc	agc	atg	act	ttc	ttg	aac	6142	
Lys	Asp	Asn	Arg	Leu	Leu	Ser	Gly	Ser	Thr	Ser	Met	Thr	Phe	Leu	Asn		
				1960					1965						1970		
aga	gga	cag	atc	att	gat	att	gaa	agt	gcc	cag	atc	tca	gat	gct	ggc	6190	
Arg	Gly	Gln	Ile	Ile	Asp	Ile	Glu	Ser	Ala	Gln	Ile	Ser	Asp	Ala	Gly		
			1975					1980					1985				
ata	tat	aaa	tgc	gtg	gcc	atc	aac	tca	gct	gga	gct	aca	gag	tta	ttt	6238	
Ile	Tyr	Lys	Cys	Val	Ala	Ile	Asn	Ser	Ala	Gly	Ala	Thr	Glu	Leu	Phe		
		1990					1995					2000					
tac	agt	ctg	caa	gtt	cat	gtg	gcc	cca	tca	att	tct	ggc	agc	aat	aac	6286	
Tyr	Ser	Leu	Gln	Val	His	Val	Ala	Pro	Ser	Ile	Ser	Gly	Ser	Asn	Asn		
	2005					2010					2015						
atg	gtg	gca	gtg	gtg	gtt	aat	aac	ccg	gtg	agg	tta	gaa	tgt	gaa	gcc	6334	
Met	Val	Ala	Val	Val	Val	Asn	Asn	Pro	Val	Arg	Leu	Glu	Cys	Glu	Ala		
2020					2025					2030					2035		
aga	ggt	att	cct	gcc	cca	agt	ctg	acc	tgg	ttg	aaa	gat	ggg	agt	cct	6382	
Arg	Gly	Ile	Pro	Ala	Pro	Ser	Leu	Thr	Trp	Leu	Lys	Asp	Gly	Ser	Pro		
				2040					2045				2050				
gtt	tct	agt	ttt	tct	aat	gga	tta	cag	gtt	ctc	tct	ggt	ggt	cga	atc	6430	
Val	Ser	Ser	Phe	Ser	Asn	Gly	Leu	Gln	Val	Leu	Ser	Gly	Gly	Arg	Ile		
			2055					2060					2065				
cta	gca	ttg	acc	agt	gca	caa	atc	agc	gac	aca	gga	agg	tac	acc	tgc	6478	
Leu	Ala	Leu	Thr	Ser	Ala	Gln	Ile	Ser	Asp	Thr	Gly	Arg	Tyr	Thr	Cys		
		2070					2075					2080					

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gtg gca gtg aat gct gct gga gaa aag caa agg gac att gac ctc cga Val Ala Val Asn Ala Ala Gly Glu Lys Gln Arg Asp Ile Asp Leu Arg 2085 2090 2095	6526
gta tat gtt ccg cca aat att atg gga gaa gaa cag aat gtc tct gtc Val Tyr Val Pro Pro Asn Ile Met Gly Glu Glu Gln Asn Val Ser Val 2100 2105 2110 2115	6574
ctc att agc caa gct gtg gaa tta cta tgt caa agt gat gct att ccc Leu Ile Ser Gln Ala Val Glu Leu Leu Cys Gln Ser Asp Ala Ile Pro 2120 2125 2130	6622
cca cct act ctt act tgg tta aaa gac ggc cac ccc ttg ctg aag aaa Pro Pro Thr Leu Thr Trp Leu Lys Asp Gly His Pro Leu Leu Lys Lys 2135 2140 2145	6670
cca ggc ctc agt ata tct gaa aat aga agt gtg tta aag att gaa gat Pro Gly Leu Ser Ile Ser Glu Asn Arg Ser Val Leu Lys Ile Glu Asp 2150 2155 2160	6718
gct cag gtt caa gac act ggt cgt tac act tgt gaa gca aca aat gtt Ala Gln Val Gln Asp Thr Gly Arg Tyr Thr Cys Glu Ala Thr Asn Val 2165 2170 2175	6766
gct gga aaa act gaa aaa aac tac aat gtc aac att tgg gtc ccc cca Ala Gly Lys Thr Glu Lys Asn Tyr Asn Val Asn Ile Trp Val Pro Pro 2180 2185 2190 2195	6814
aat att ggt ggt tct gat gaa ctt act caa ctt aca gtc att gaa ggg Asn Ile Gly Gly Ser Asp Glu Leu Thr Gln Leu Thr Val Ile Glu Gly 2200 2205 2210	6862
aat ctc att agt ctg ttg tgt gaa tca agt ggt att cca ccc cca aat Asn Leu Ile Ser Leu Leu Cys Glu Ser Ser Gly Ile Pro Pro Pro Asn 2215 2220 2225	6910
ctc atc tgg aag aag aaa ggc tct cca gtg ctg act gat tcc atg ggg Leu Ile Trp Lys Lys Lys Gly Ser Pro Val Leu Thr Asp Ser Met Gly 2230 2235 2240	6958
cga gtt aga att tta tct ggg ggc agg caa tta caa att tca att gct Arg Val Arg Ile Leu Ser Gly Gly Arg Gln Leu Gln Ile Ser Ile Ala 2245 2250 2255	7006
gaa aag tct gat gca gca ctc tat tca tgt gtg gcg tcg aat gtt gct Glu Lys Ser Asp Ala Ala Leu Tyr Ser Cys Val Ala Ser Asn Val Ala 2260 2265 2270 2275	7054
ggg act gca aag aaa gaa tac aat ctg caa gtt tac att aga cca acc Gly Thr Ala Lys Lys Glu Tyr Asn Leu Gln Val Tyr Ile Arg Pro Thr 2280 2285 2290	7102
ata acc aac agt ggc agc cac cct act gaa att att gtg acc cga ggg Ile Thr Asn Ser Gly Ser His Pro Thr Glu Ile Ile Val Thr Arg Gly 2295 2300 2305	7150
aag agt atc tcc ttg gag tgt gag gtg cag ggt att cca cca cca aca Lys Ser Ile Ser Leu Glu Cys Glu Val Gln Gly Ile Pro Pro Pro Thr 2310 2315 2320	7198
gtg acc tgg atg aaa gat ggc cac ccc ttg atc aag gca aag gga gta Val Thr Trp Met Lys Asp Gly His Pro Leu Ile Lys Ala Lys Gly Val 2325 2330 2335	7246

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gaa ata ctg gat gaa ggt cac atc ctt cag ctg aag aac att cat gta Glu Ile Leu Asp Glu Gly His Ile Leu Gln Leu Lys Asn Ile His Val 2340 2345 2350 2355	7294
tct gac aca ggc cgt tat gtg tgt gtt gct gtg aat gta gca gga atg Ser Asp Thr Gly Arg Tyr Val Cys Val Ala Val Asn Val Ala Gly Met 2360 2365 2370	7342
act gac aaa aaa tat gac tta agt gtc cat gct cct cca agc atc ata Thr Asp Lys Lys Tyr Asp Leu Ser Val His Ala Pro Pro Ser Ile Ile 2375 2380 2385	7390
gga aac cac agg tca cct gaa aat att agt gtg gta gaa aag aac tca Gly Asn His Arg Ser Pro Glu Asn Ile Ser Val Val Glu Lys Asn Ser 2390 2395 2400	7438
gta tct ttg act tgt gaa gct tct gga att ccc ctg cct tcc ata acc Val Ser Leu Thr Cys Glu Ala Ser Gly Ile Pro Leu Pro Ser Ile Thr 2405 2410 2415	7486
tgg ttc aaa gat ggg tgg cct gtc agc ctt agc aat tct gtg agg att Trp Phe Lys Asp Gly Trp Pro Val Ser Leu Ser Asn Ser Val Arg Ile 2420 2425 2430 2435	7534
ctt tca gga ggc agg atg cta cgg ctg atg cag acc aca atg gaa gat Leu Ser Gly Gly Arg Met Leu Arg Leu Met Gln Thr Thr Met Glu Asp 2440 2445 2450	7582
gct ggc caa tat act tgc gtt gta agg aat gca gct ggt gaa gaa aga Ala Gly Gln Tyr Thr Cys Val Val Arg Asn Ala Ala Gly Glu Glu Arg 2455 2460 2465	7630
aaa atc ttt ggg ctt tca gta tta gta cca cct cat att gtg ggt gaa Lys Ile Phe Gly Leu Ser Val Leu Val Pro Pro His Ile Val Gly Glu 2470 2475 2480	7678
aat aca ttg gaa gat gtg aag gta aaa gag aaa cag agt gtt acg ctg Asn Thr Leu Glu Asp Val Lys Val Lys Glu Lys Gln Ser Val Thr Leu 2485 2490 2495	7726
act tgt gaa gtg aca ggg aat cca gtg cca gaa att aca tgg cac aaa Thr Cys Glu Val Thr Gly Asn Pro Val Pro Glu Ile Thr Trp His Lys 2500 2505 2510 2515	7774
gat ggg cag ccc ctc caa gaa gat gaa gcc cat cac att ata tct ggt Asp Gly Gln Pro Leu Gln Glu Asp Glu Ala His His Ile Ile Ser Gly 2520 2525 2530	7822
ggc cgt ttt ctt caa att acc aat gtc cag gtg cca cac act gga aga Gly Arg Phe Leu Gln Ile Thr Asn Val Gln Val Pro His Thr Gly Arg 2535 2540 2545	7870
tat aca tgt ttg gct tcc agt cca gct ggc cac aag agc agg agc ttc Tyr Thr Cys Leu Ala Ser Ser Pro Ala Gly His Lys Ser Arg Ser Phe 2550 2555 2560	7918
agt ctt aat gta ttt gta tct cct aca att gct ggt gta ggt agt gat Ser Leu Asn Val Phe Val Ser Pro Thr Ile Ala Gly Val Gly Ser Asp 2565 2570 2575	7966
ggc aac cct gaa gat gtc act gtc atc ctt aac agc cct aca tct ttg Gly Asn Pro Glu Asp Val Thr Val Ile Leu Asn Ser Pro Thr Ser Leu 2580 2585 2590	8014

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2580	2585	2590	2595	
gtc tgt gaa gct tat tca tat cct cca gct acc atc acc tgg ttt aag	Val Cys Glu Ala Tyr Ser Tyr Pro Pro Ala Thr Ile Thr Trp Phe Lys	8062		
	2600	2605	2610	
gat ggc act cct tta gaa tct aac cga aat att cgt att ctt cca gga	Asp Gly Thr Pro Leu Glu Ser Asn Arg Asn Ile Arg Ile Leu Pro Gly	8110		
	2615	2620	2625	
ggc aga act ctg cag atc ctc aat gca cag gag gac aat gct gga aga	Gly Arg Thr Leu Gln Ile Leu Asn Ala Gln Glu Asp Asn Ala Gly Arg	8158		
	2630	2635	2640	
tac tct tgt gta gcc acg aat gag gct gga gaa atg ata aag cac tat	Tyr Ser Cys Val Ala Thr Asn Glu Ala Gly Glu Met Ile Lys His Tyr	8206		
	2645	2650	2655	
gaa gtg aag gtg tac att cca ccc ata atc aat aaa ggg gac ctt tgg	Glu Val Lys Val Tyr Ile Pro Pro Ile Ile Asn Lys Gly Asp Leu Trp	8254		
	2660	2665	2670	2675
ggg cca ggt ctt tcc cct aaa gaa gtg aag atc aaa gta aac aac act	Gly Pro Gly Leu Ser Pro Lys Glu Val Lys Ile Lys Val Asn Asn Thr	8302		
	2680	2685	2690	
ctg acc ttg gaa tgt gaa gcg tat gca att cct tct gcc tcc ctc agc	Leu Thr Leu Glu Cys Glu Ala Tyr Ala Ile Pro Ser Ala Ser Leu Ser	8350		
	2695	2700	2705	
tgg tac aag gat gga cag ccc ctt aaa tcc gat gat cat gtt aat att	Trp Tyr Lys Asp Gly Gln Pro Leu Lys Ser Asp Asp His Val Asn Ile	8398		
	2710	2715	2720	
gct gcg aat gga cac aca ctt caa ata aag gag gct caa ata tca gac	Ala Ala Asn Gly His Thr Leu Gln Ile Lys Glu Ala Gln Ile Ser Asp	8446		
	2725	2730	2735	
acc gga cga tat act tgt gta gca tct aac att gca ggt gaa gat gag	Thr Gly Arg Tyr Thr Cys Val Ala Ser Asn Ile Ala Gly Glu Asp Glu	8494		
	2740	2745	2750	2755
ttg gat ttt gat gtg aat att caa gtt cct cca agt ttt cag aaa ctc	Leu Asp Phe Asp Val Asn Ile Gln Val Pro Pro Ser Phe Gln Lys Leu	8542		
	2760	2765	2770	
tgg gaa ata gga aac atg cta gat act ggc agg aat ggt gaa gcc aaa	Trp Glu Ile Gly Asn Met Leu Asp Thr Gly Arg Asn Gly Glu Ala Lys	8590		
	2775	2780	2785	
gat gtg atc atc aac aat ccc att tct ctt tac tgt gag aca aat gct	Asp Val Ile Ile Asn Asn Pro Ile Ser Leu Tyr Cys Glu Thr Asn Ala	8638		
	2790	2795	2800	
gct ccc cct cct aca ctg aca tgg tac aaa gat ggc cac cct ctg acc	Ala Pro Pro Pro Thr Leu Thr Trp Tyr Lys Asp Gly His Pro Leu Thr	8686		
	2805	2810	2815	
tca agt gat aaa gta ttg att ttg cca gga ggg cga gtg ttg cag att	Ser Ser Asp Lys Val Leu Ile Leu Pro Gly Gly Arg Val Leu Gln Ile	8734		
	2820	2825	2830	2835
cct cgg gct aaa gta gaa gat gct ggg aga tac aca tgt gtg gct gtg		8782		

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Pro	Arg	Ala	Lys	Val	Glu	Asp	Ala	Gly	Arg	Tyr	Thr	Cys	Val	Ala	Val		
				2840					2845						2850		
aat	gag	gct	gga	gaa	gat	tcc	ctt	caa	tat	gat	gtc	cgt	gta	ctc	gtg	8830	
Asn	Glu	Ala	Gly	Glu	Asp	Ser	Leu	Gln	Tyr	Asp	Val	Arg	Val	Leu	Val		
			2855					2860					2865				
ccg	cca	att	atc	aag	gga	gca	aat	agt	gat	ctc	cct	gaa	gag	gtc	acc	8878	
Pro	Pro	Ile	Ile	Lys	Gly	Ala	Asn	Ser	Asp	Leu	Pro	Glu	Glu	Val	Thr		
		2870					2875					2880					
gtg	ctg	gtg	aac	aag	agt	gca	ctg	ata	gag	tgt	tta	tcc	agt	ggc	agc	8926	
Val	Leu	Val	Asn	Lys	Ser	Ala	Leu	Ile	Glu	Cys	Leu	Ser	Ser	Gly	Ser		
	2885					2890					2895						
cca	gca	cca	agg	aat	tcc	tgg	cag	aaa	gat	gga	cag	ccc	ttg	cta	gaa	8974	
Pro	Ala	Pro	Arg	Asn	Ser	Trp	Gln	Lys	Asp	Gly	Gln	Pro	Leu	Leu	Glu		
2900					2905					2910					2915		
gat	gac	cat	cat	aaa	ttt	cta	tct	aat	gga	cga	att	ctg	cag	att	ctg	9022	
Asp	Asp	His	His	Lys	Phe	Leu	Ser	Asn	Gly	Arg	Ile	Leu	Gln	Ile	Leu		
				2920					2925					2930			
aat	act	caa	ata	aca	gat	atc	ggc	agg	tat	gtg	tgt	gtt	gct	gag	aac	9070	
Asn	Thr	Gln	Ile	Thr	Asp	Ile	Gly	Arg	Tyr	Val	Cys	Val	Ala	Glu	Asn		
			2935				2940						2945				
aca	gct	ggg	agt	gcc	aaa	aaa	tat	ttt	aac	ctc	aat	gtt	cat	gtt	cct	9118	
Thr	Ala	Gly	Ser	Ala	Lys	Lys	Tyr	Phe	Asn	Leu	Asn	Val	His	Val	Pro		
		2950					2955					2960					
cca	agt	gtc	att	ggc	cct	aaa	tct	gaa	aat	ctt	acc	gtc	gtg	gtg	aac	9166	
Pro	Ser	Val	Ile	Gly	Pro	Lys	Ser	Glu	Asn	Leu	Thr	Val	Val	Val	Asn		
	2965					2970					2975						
aat	ttc	atc	tct	ttg	acc	tgt	gag	gtc	tct	ggc	ttt	cca	cct	cct	gac	9214	
Asn	Phe	Ile	Ser	Leu	Thr	Cys	Glu	Val	Ser	Gly	Phe	Pro	Pro	Pro	Asp		
2980					2985					2990					2995		
ctc	agc	tgg	ctc	aag	aat	gaa	cag	ccc	atc	aaa	ctg	aac	aca	aat	act	9262	
Leu	Ser	Trp	Leu	Lys	Asn	Glu	Gln	Pro	Ile	Lys	Leu	Asn	Thr	Asn	Thr		
				3000					3005					3010			
ctc	att	gtg	cct	ggc	ggc	cga	act	cta	cag	att	att	cgg	gcc	aag	gta	9310	
Leu	Ile	Val	Pro	Gly	Gly	Arg	Thr	Leu	Gln	Ile	Ile	Arg	Ala	Lys	Val		
			3015					3020					3025				
tca	gat	ggc	ggc	gaa	tac	act	tgt	ata	gct	atc	aat	caa	gct	ggc	gaa	9358	
Ser	Asp	Gly	Gly	Glu	Tyr	Thr	Cys	Ile	Ala	Ile	Asn	Gln	Ala	Gly	Glu		
		3030					3035					3040					
agc	aag	aaa	aag	ttt	tcc	ctg	act	gtt	tat	gtg	ccc	cca	agc	att	aaa	9406	
Ser	Lys	Lys	Lys	Phe	Ser	Leu	Thr	Val	Tyr	Val	Pro	Pro	Ser	Ile	Lys		
	3045					3050					3055						
gac	cat	gac	agt	gaa	tct	ctt	tct	gta	gtt	aat	gta	aga	gag	gga	act	9454	
Asp	His	Asp	Ser	Glu	Ser	Leu	Ser	Val	Val	Asn	Val	Arg	Glu	Gly	Thr		
3060					3065					3070					3075		
tct	gtg	tct	ttg	gag	tgt	gag	tcg	aac	gct	gtg	cca	cct	cca	gtc	atc	9502	
Ser	Val	Ser	Leu	Glu	Cys	Glu	Ser	Asn	Ala	Val	Pro	Pro	Pro	Val	Ile		
				3080					3085					3090			

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act tgg tat aag aat ggg cgg atg ata aca gag tct act cat gtg gag	9550
Thr Trp Tyr Lys Asn Gly Arg Met Ile Thr Glu Ser Thr His Val Glu	
3095 3100 3105	
att tta gct gat gga caa atg cta cac att aag aaa gct gag gta tct	9598
Ile Leu Ala Asp Gly Gln Met Leu His Ile Lys Lys Ala Glu Val Ser	
3110 3115 3120	
gac aca ggc cag tat gta tgt aga gct ata aat gta gca gga cgg gat	9646
Asp Thr Gly Gln Tyr Val Cys Arg Ala Ile Asn Val Ala Gly Arg Asp	
3125 3130 3135	
gat aaa aat ttc cac ctc aat gta tat gtg cca ccc agt att gaa gga	9694
Asp Lys Asn Phe His Leu Asn Val Tyr Val Pro Pro Ser Ile Glu Gly	
3140 3145 3150 3155	
cct gaa aga gaa gtg att gtg gag acg atc agc aat cct gtg aca tta	9742
Pro Glu Arg Glu Val Ile Val Glu Thr Ile Ser Asn Pro Val Thr Leu	
3160 3165 3170	
aca tgt gat gcc act ggg atc cca cct ccc acg ata gca tgg tta aag	9790
Thr Cys Asp Ala Thr Gly Ile Pro Pro Pro Thr Ile Ala Trp Leu Lys	
3175 3180 3185	
aac cac aag cgc ata gaa aat tct gac tca ctg gaa gtt cgt att ttg	9838
Asn His Lys Arg Ile Glu Asn Ser Asp Ser Leu Glu Val Arg Ile Leu	
3190 3195 3200	
tct gga ggt agc aaa ctc cag att gcc cgg tct cag cat tca gat agt	9886
Ser Gly Gly Ser Lys Leu Gln Ile Ala Arg Ser Gln His Ser Asp Ser	
3205 3210 3215	
gga aac tat aca tgt att gct tca aat atg gag gga aaa gcc cag aaa	9934
Gly Asn Tyr Thr Cys Ile Ala Ser Asn Met Glu Gly Lys Ala Gln Lys	
3220 3225 3230 3235	
tat tac ttt ctt tca att caa gtt cct cca agt gtt gct ggt gct gaa	9982
Tyr Tyr Phe Leu Ser Ile Gln Val Pro Pro Ser Val Ala Gly Ala Glu	
3240 3245 3250	
att cca agt gat gtc agt gtc ctt cta gga gaa aat gtt gag ctg gtc	10030
Ile Pro Ser Asp Val Ser Val Leu Leu Gly Glu Asn Val Glu Leu Val	
3255 3260 3265	
tgc aat gca aat ggc att cct act cca ctt att caa tgg ctt aaa gat	10078
Cys Asn Ala Asn Gly Ile Pro Thr Pro Leu Ile Gln Trp Leu Lys Asp	
3270 3275 3280	
gga aag ccc ata gct agt ggt gaa aca gaa aga atc cga gtg agt gca	10126
Gly Lys Pro Ile Ala Ser Gly Glu Thr Glu Arg Ile Arg Val Ser Ala	
3285 3290 3295	
aat ggc agc aca tta aac att tat gga gct ctt aca tct gac acg ggg	10174
Asn Gly Ser Thr Leu Asn Ile Tyr Gly Ala Leu Thr Ser Asp Thr Gly	
3300 3305 3310 3315	
aaa tac aca tgt gtt gct act aat ccc gct gga gaa gaa gac cga att	10222
Lys Tyr Thr Cys Val Ala Thr Asn Pro Ala Gly Glu Glu Asp Arg Ile	
3320 3325 3330	
ttt aac ttg aat gtc tat gtt aca cct aca att agg ggt aat aaa gat	10270
Phe Asn Leu Asn Val Tyr Val Thr Pro Thr Ile Arg Gly Asn Lys Asp	
3335 3340 3345	

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gaa gca gag aaa cta atg act tta gtg gat act tca ata aat att gaa Glu Ala Glu Lys Leu Met Thr Leu Val Asp Thr Ser Ile Asn Ile Glu 3350 3355 3360	10318
tgc aga gcc aca ggg acg cct cca cca cag ata aac tgg ctg aag aat Cys Arg Ala Thr Gly Thr Pro Pro Gln Ile Asn Trp Leu Lys Asn 3365 3370 3375	10366
gga ctt cct ctg cct ctc tcc tcc cat atc cgg tta ctg gca gca gga Gly Leu Pro Leu Pro Leu Ser Ser His Ile Arg Leu Leu Ala Ala Gly 3380 3385 3390 3395	10414
caa gtt atc agg att gtg aga gct cag gtg tct gat gtc gct gtg tat Gln Val Ile Arg Ile Val Arg Ala Gln Val Ser Asp Val Ala Val Tyr 3400 3405 3410	10462
act tgt gtg gcc tcc aac aga gct ggg gtg gat aat aag cat tac aat Thr Cys Val Ala Ser Asn Arg Ala Gly Val Asp Asn Lys His Tyr Asn 3415 3420 3425	10510
ctt caa gtg ttt gca cca cca aat atg gac aat tca atg ggg aca gag Leu Gln Val Phe Ala Pro Pro Asn Met Asp Asn Ser Met Gly Thr Glu 3430 3435 3440	10558
gaa atc aca gtt ctc aaa ggt agt tcc acc tct atg gca tgc att act Glu Ile Thr Val Leu Lys Gly Ser Ser Thr Ser Met Ala Cys Ile Thr 3445 3450 3455	10606
gat gga acc cca gct ccc agt atg gcc tgg ctt aga gat ggc cag cct Asp Gly Thr Pro Ala Pro Ser Met Ala Trp Leu Arg Asp Gly Gln Pro 3460 3465 3470 3475	10654
ctg ggg ctt gat gcc cat ctg aca gtc agc acc cat gga atg gtc ctg Leu Gly Leu Asp Ala His Leu Thr Val Ser Thr His Gly Met Val Leu 3480 3485 3490	10702
cag ctc ctc aaa gca gag act gaa gat tcg gga aag tac acc tgc att Gln Leu Leu Lys Ala Glu Thr Glu Asp Ser Gly Lys Tyr Thr Cys Ile 3495 3500 3505	10750
gcc tca aat gaa gct gga gaa gtc agc aag cac ttt atc ctc aag gtc Ala Ser Asn Glu Ala Gly Glu Val Ser Lys His Phe Ile Leu Lys Val 3510 3515 3520	10798
cta gaa cca cct cac att aat gga tct gaa gaa cat gaa gag ata tca Leu Glu Pro Pro His Ile Asn Gly Ser Glu Glu His Glu Glu Ile Ser 3525 3530 3535	10846
gta att gtt aat aac cca ctt gaa ctt acc tgc att gct tct gga atc Val Ile Val Asn Asn Pro Leu Glu Leu Thr Cys Ile Ala Ser Gly Ile 3540 3545 3550 3555	10894
cca gcc cct aaa atg acc tgg atg aaa gat ggc cgg ccc ctt cca cag Pro Ala Pro Lys Met Thr Trp Met Lys Asp Gly Arg Pro Leu Pro Gln 3560 3565 3570	10942
acg gat caa gtg caa act cta gga gga gga gag gtt ctt cga att tct Thr Asp Gln Val Gln Thr Leu Gly Gly Gly Glu Val Leu Arg Ile Ser 3575 3580 3585	10990
act gct cag gtg gag gat aca gga aga tat aca tgt ctg gca tcc agt Thr Ala Gln Val Glu Asp Thr Gly Arg Tyr Thr Cys Leu Ala Ser Ser 3590 3595 3600	11038

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3590	3595	3600	
cct gca gga gat gat gat Pro Ala Gly Asp Asp Asp 3605	aag gaa tat cta gtg Lys Glu Tyr Leu Val 3610	aga gtg cat gta cct Arg Val His Val Pro 3615	11086
cct aat att gct gga act gat gag ccc cgg Pro Asn Ile Ala Gly Thr Asp Glu Pro Arg 3620	gat atc act gtg tta cgg Asp Ile Thr Val Leu Arg 3630		11134
aac aga caa gtg aca ttg gaa tgc aag tca Asn Arg Gln Val Thr Leu Glu Cys Lys Ser 3640	gat gca gtg ccc cca cct Asp Ala Val Pro Pro Pro 3645		11182
gta att act tgg ctc aga aat gga gaa cgg Val Ile Thr Trp Leu Arg Asn Gly Glu Arg 3655	tta cag gca aca cct cga Leu Gln Ala Thr Pro Arg 3660		11230
gtg cga atc cta tct gga ggg aga tac ttg Val Arg Ile Leu Ser Gly Gly Arg Tyr Leu 3670	caa atc aac aat gct gac Gln Ile Asn Asn Ala Asp 3680		11278
cta ggt gat aca gcc aat tat acc tgt gtt Leu Gly Asp Thr Ala Asn Tyr Thr Cys Val 3685	gcc agc aac att gca gga Ala Ser Asn Ile Ala Gly 3695		11326
aag act aca aga gaa ttt att ctc act gta Lys Thr Thr Arg Glu Phe Ile Leu Thr Val 3700	aat gtt cct cca aac ata Asn Val Pro Pro Asn Ile 3710		11374
aag ggg ggc ccc cag agc ctt gta att ctt Lys Gly Gly Pro Gln Ser Leu Val Ile Leu 3720	tta aat aag tca act gta Leu Leu Asn Lys Ser Thr Val 3730		11422
ttg gaa tgc atc gct gaa ggt gtg cca act Leu Glu Cys Ile Ala Glu Gly Val Pro Thr 3735	cca agg ata aca tgg aga Pro Arg Ile Thr Trp Arg 3740		11470
aag gat gga gct gtt cta gct ggg aat cat Lys Asp Gly Ala Val Leu Ala Gly Asn His 3750	gca aga tat tcc atc ttg Ala Arg Tyr Ser Ile Leu 3760		11518
gaa aat gga ttc ctt cat att caa tca gca Glu Asn Gly Phe Leu His Ile Gln Ser Ala 3765	cat gtc act gac act gga His Val Thr Asp Thr Gly 3775		11566
cgg tat ttg tgt atg gcc acc aat gct gct Arg Tyr Leu Cys Met Ala Thr Asn Ala Ala 3780	gga aca gat cgc agg cga Gly Thr Asp Arg Arg Arg 3790		11614
ata gat tta cag gtc cat gtt cct cca tct Ile Asp Leu Gln Val His Val Pro Pro Ser 3800	att gct ccg ggt cct acc Ile Ala Pro Gly Pro Thr 3805		11662
aac atg act gta ata gta aat gtt caa act Asn Met Thr Val Ile Val Asn Val Gln Thr 3815	act ctg gct tgt gag gct Thr Thr Leu Ala Cys Glu Ala 3820		11710
act ggg ata cca aaa cca tca atc aat tgg Thr Gly Ile Pro Lys Pro Ser Ile Asn Trp 3830	aga aaa aat ggg cat ctt Arg Lys Asn Gly His Leu 3840		11758
ctt aat gtg gat caa aat cag aac tca tac agg ctc ctt tct tca ggt			11806

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Leu	Asn	Val	Asp	Gln	Asn	Gln	Asn	Ser	Tyr	Arg	Leu	Ser	Ser	Gly		
3845						3850					3855					
tca	cta	gta	att	att	tcc	cct	tct	gtg	gat	gac	act	gca	acc	tat	gaa	11854
Ser	Leu	Val	Ile	Ile	Ser	Pro	Ser	Val	Asp	Asp	Thr	Ala	Thr	Tyr	Glu	
3860					3865					3870					3875	
tgt	act	gtg	aca	aac	ggt	gct	gga	gat	gat	aaa	aga	act	gtg	gat	ctc	11902
Cys	Thr	Val	Thr	Asn	Gly	Ala	Gly	Asp	Asp	Lys	Arg	Thr	Val	Asp	Leu	
				3880					3885					3890		
act	gtc	caa	gtt	cca	cct	tcc	ata	gct	gat	gag	cct	aca	gat	ttc	cta	11950
Thr	Val	Gln	Val	Pro	Pro	Ser	Ile	Ala	Asp	Glu	Pro	Thr	Asp	Phe	Leu	
			3895					3900					3905			
gta	acc	aaa	cat	gcc	cca	gca	gta	att	acc	tgc	act	gct	tcg	gga	gtt	11998
Val	Thr	Lys	His	Ala	Pro	Ala	Val	Ile	Thr	Cys	Thr	Ala	Ser	Gly	Val	
		3910					3915					3920				
cca	ttt	ccc	tca	att	cac	tgg	acc	aaa	aat	ggt	ata	aga	ctg	ctt	ccc	12046
Pro	Phe	Pro	Ser	Ile	His	Trp	Thr	Lys	Asn	Gly	Ile	Arg	Leu	Leu	Pro	
	3925					3930					3935					
agg	gga	gat	ggc	tat	aga	att	ctg	tcc	tca	gga	gca	att	gaa	ata	ctt	12094
Arg	Gly	Asp	Gly	Tyr	Arg	Ile	Leu	Ser	Ser	Gly	Ala	Ile	Glu	Ile	Leu	
3940					3945					3950					3955	
gcc	acc	caa	tta	aac	cat	gct	gga	aga	tac	act	tgt	gtc	gct	agg	aat	12142
Ala	Thr	Gln	Leu	Asn	His	Ala	Gly	Arg	Tyr	Thr	Cys	Val	Ala	Arg	Asn	
				3960					3965					3970		
gcg	gct	ggc	tct	gca	cat	cga	cac	gtg	acc	ctt	cat	gtt	cat	gag	cct	12190
Ala	Ala	Gly	Ser	Ala	His	Arg	His	Val	Thr	Leu	His	Val	His	Glu	Pro	
			3975					3980					3985			
cca	gtc	att	cag	ccc	caa	cca	agt	gaa	cta	cac	gtc	att	ctg	aac	aat	12238
Pro	Val	Ile	Gln	Pro	Gln	Pro	Ser	Glu	Leu	His	Val	Ile	Leu	Asn	Asn	
		3990					3995					4000				
cct	att	tta	tta	cca	tgt	gaa	gca	aca	ggg	aca	ccc	agt	cct	ttc	att	12286
Pro	Ile	Leu	Leu	Pro	Cys	Glu	Ala	Thr	Gly	Thr	Pro	Ser	Pro	Phe	Ile	
	4005					4010					4015					
act	tgg	caa	aaa	gaa	ggc	atc	aat	gtt	aac	act	tca	ggc	aga	aac	cat	12334
Thr	Trp	Gln	Lys	Glu	Gly	Ile	Asn	Val	Asn	Thr	Ser	Gly	Arg	Asn	His	
4020					4025					4030					4035	
gca	gtt	ctt	cct	agt	ggc	ggc	tta	cag	atc	tcc	aga	gct	gtc	cga	gag	12382
Ala	Val	Leu	Pro	Ser	Gly	Gly	Leu	Gln	Ile	Ser	Arg	Ala	Val	Arg	Glu	
				4040					4045					4050		
gat	gct	ggc	act	tac	atg	tgt	gtg	gcc	cag	aac	ccg	gct	ggt	aca	gcc	12430
Asp	Ala	Gly	Thr	Tyr	Met	Cys	Val	Ala	Gln	Asn	Pro	Ala	Gly	Thr	Ala	
			4055					4060					4065			
ttg	ggc	aaa	atc	aag	tta	aat	gtc	caa	gtt	cct	cca	gtc	att	agc	cct	12478
Leu	Gly	Lys	Ile	Lys	Leu	Asn	Val	Gln	Val	Pro	Pro	Val	Ile	Ser	Pro	
		4070					4075					4080				
cat	cta	aag	gaa	tat	gtt	att	gct	gtg	gac	aag	ccc	atc	acg	tta	tcc	12526
His	Leu	Lys	Glu	Tyr	Val	Ile	Ala	Val	Asp	Lys	Pro	Ile	Thr	Leu	Ser	
	4085					4090					4095					

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tgt gaa gca gat ggc ctc cct ccg cct gac att aca tgg cat aaa gat	12574
Cys Glu Ala Asp Gly Leu Pro Pro Pro Asp Ile Thr Trp His Lys Asp	
4100 4105 4110 4115	
ggg cgt gca att gtg gaa tct atc cgc cag cgc gtc ctc agc tct ggc	12622
Gly Arg Ala Ile Val Glu Ser Ile Arg Gln Arg Val Leu Ser Ser Gly	
4120 4125 4130	
tct ctg caa ata gca ttt gtc cag cct ggt gat gct ggc cat tac acg	12670
Ser Leu Gln Ile Ala Phe Val Gln Pro Gly Asp Ala Gly His Tyr Thr	
4135 4140 4145	
tgc atg gca gcc aat gta gca gga tca agc agc aca agc acc aag ctc	12718
Cys Met Ala Ala Asn Val Ala Gly Ser Ser Ser Thr Ser Thr Lys Leu	
4150 4155 4160	
acc gtc cat gta cca ccc agg atc aga agt aca gaa gga cac tac acg	12766
Thr Val His Val Pro Pro Arg Ile Arg Ser Thr Glu Gly His Tyr Thr	
4165 4170 4175	
gtc aat gag aat tca caa gcc att ctt cca tgc gta gct gat gga atc	12814
Val Asn Glu Asn Ser Gln Ala Ile Leu Pro Cys Val Ala Asp Gly Ile	
4180 4185 4190 4195	
ccc aca cca gca att aac tgg aaa aaa gac aat gtt ctt tta gct aac	12862
Pro Thr Pro Ala Ile Asn Trp Lys Lys Asp Asn Val Leu Leu Ala Asn	
4200 4205 4210	
ttg tta gga aaa tac act gct gaa cca tat gga gaa ctc att tta gaa	12910
Leu Leu Gly Lys Tyr Thr Ala Glu Pro Tyr Gly Glu Leu Ile Leu Glu	
4215 4220 4225	
aat gtt gtg ctg gag gat tct ggc ttc tat acc tgt gtt gct aac aat	12958
Asn Val Val Leu Glu Asp Ser Gly Phe Tyr Thr Cys Val Ala Asn Asn	
4230 4235 4240	
gct gca ggt gaa gat aca cac act gtc agc ctg act gtg cat gtt ctc	13006
Ala Ala Gly Glu Asp Thr His Thr Val Ser Leu Thr Val His Val Leu	
4245 4250 4255	
ccc act ttt act gaa ctt cct gga gac gtg tca tta aat aaa gga gaa	13054
Pro Thr Phe Thr Glu Leu Pro Gly Asp Val Ser Leu Asn Lys Gly Glu	
4260 4265 4270 4275	
cag cta cga tta agc tgt aaa gct act ggt att cca ttg ccc aaa tta	13102
Gln Leu Arg Leu Ser Cys Lys Ala Thr Gly Ile Pro Leu Pro Lys Leu	
4280 4285 4290	
aca tgg acc ttc aat aac aat att att cca gcc cac ttt gac agt gtg	13150
Thr Trp Thr Phe Asn Asn Asn Ile Ile Pro Ala His Phe Asp Ser Val	
4295 4300 4305	
aat gga cac agt gaa ctt gtt att gaa aga gtg tca aaa gag gat tca	13198
Asn Gly His Ser Glu Leu Val Ile Glu Arg Val Ser Lys Glu Asp Ser	
4310 4315 4320	
ggt act tat gtg tgc acc gca gag aac agc gtt ggc ttt gtg aag gca	13246
Gly Thr Tyr Val Cys Thr Ala Glu Asn Ser Val Gly Phe Val Lys Ala	
4325 4330 4335	
att gga ttt gtt tat gtg aaa gaa cct cca gtc ttc aaa ggt gat tat	13294
Ile Gly Phe Val Tyr Val Lys Glu Pro Pro Val Phe Lys Gly Asp Tyr	
4340 4345 4350 4355	

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cct tct aac tgg att gaa cca ctt ggt ggg aat gca atc ctg aat tgt	13342
Pro Ser Asn Trp Ile Glu Pro Leu Gly Gly Asn Ala Ile Leu Asn Cys	
4360 4365 4370	
gag gtg aaa gga gac ccc acc cca acc atc cag tgg aac aga aag gga	13390
Glu Val Lys Gly Asp Pro Thr Pro Thr Ile Gln Trp Asn Arg Lys Gly	
4375 4380 4385	
gtg gat att gaa att agc cac aga atc cgg caa ctg ggc aat ggc tcc	13438
Val Asp Ile Glu Ile Ser His Arg Ile Arg Gln Leu Gly Asn Gly Ser	
4390 4395 4400	
ctg gcc atc tat ggc act gtt aat gaa gat gcc ggt gac tat aca tgt	13486
Leu Ala Ile Tyr Gly Thr Val Asn Glu Asp Ala Gly Asp Tyr Thr Cys	
4405 4410 4415	
gta gct acc aat gaa gct ggg gtg gtg gag cgc agc atg agt ctg act	13534
Val Ala Thr Asn Glu Ala Gly Val Val Glu Arg Ser Met Ser Leu Thr	
4420 4425 4430 4435	
ctg caa agt cct cct att atc act ctt gag cca gtg gaa act gtt att	13582
Leu Gln Ser Pro Pro Ile Ile Thr Leu Glu Pro Val Glu Thr Val Ile	
4440 4445 4450	
aat gct ggt ggc aaa atc ata ttg aat tgt cag gca act gga gag cct	13630
Asn Ala Gly Gly Lys Ile Ile Leu Asn Cys Gln Ala Thr Gly Glu Pro	
4455 4460 4465	
caa cca acc att aca tgg tcc cgt caa ggg cac tct att tcc tgg gat	13678
Gln Pro Thr Ile Thr Trp Ser Arg Gln Gly His Ser Ile Ser Trp Asp	
4470 4475 4480	
gac cgg gtt aac gtg ttg tcc aac aac tca tta tat att gct gat gct	13726
Asp Arg Val Asn Val Leu Ser Asn Asn Ser Leu Tyr Ile Ala Asp Ala	
4485 4490 4495	
cag aaa gaa gat acc tct gaa ttt gaa tgt gtt gct cga aac tta atg	13774
Gln Lys Glu Asp Thr Ser Glu Phe Glu Cys Val Ala Arg Asn Leu Met	
4500 4505 4510 4515	
ggt tct gtc ctt gtc aga gtg cca gtc ata gtc cag gtt cat ggt gga	13822
Gly Ser Val Leu Val Arg Val Pro Val Ile Val Gln Val His Gly Gly	
4520 4525 4530	
ttt tcc cag tgg tct gca tgg aga gcc tgc agt gtc acc tgt gga aaa	13870
Phe Ser Gln Trp Ser Ala Trp Arg Ala Cys Ser Val Thr Cys Gly Lys	
4535 4540 4545	
ggc atc caa aag agg agt cgt ctg tgc aac cag ccc ctt cca gcc aat	13918
Gly Ile Gln Lys Arg Ser Arg Leu Cys Asn Gln Pro Leu Pro Ala Asn	
4550 4555 4560	
ggt ggg aag ccc tgc caa ggt tca gat ttg gaa atg cga aac tgt caa	13966
Gly Gly Lys Pro Cys Gln Gly Ser Asp Leu Glu Met Arg Asn Cys Gln	
4565 4570 4575	
aat aag cct tgt cca gtg gat ggt agc tgg tcg gaa tgg agt ctt tgg	14014
Asn Lys Pro Cys Pro Val Asp Gly Ser Trp Ser Glu Trp Ser Leu Trp	
4580 4585 4590 4595	
gaa gaa tgc aca agg agc tgt gga cgc ggc aac caa acc agg acc agg	14062
Glu Glu Cys Thr Arg Ser Cys Gly Arg Gly Asn Gln Thr Arg Thr Arg	

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4600															4605	4610															
act	tgc	aat	aat	cca	tca	gtt	cag	cat	ggg	ggg	cgg	cca	tgt	gaa	ggg	14110															
Thr	Cys	Asn	Asn	Pro	Ser	Val	Gln	His	Gly	Gly	Arg	Pro	Cys	Glu	Gly																
															4615	4620	4625														
aat	gct	gtg	gaa	ata	att	atg	tgc	aac	att	agg	cct	tgc	cca	gtt	cat	14158															
Asn	Ala	Val	Glu	Ile	Ile	Met	Cys	Asn	Ile	Arg	Pro	Cys	Pro	Val	His																
															4630	4635	4640														
gga	gca	tgg	agc	gct	tgg	cag	cct	tgg	gga	aca	tgc	agc	gaa	agt	tgt	14206															
Gly	Ala	Trp	Ser	Ala	Trp	Gln	Pro	Trp	Gly	Thr	Cys	Ser	Glu	Ser	Cys																
															4645	4650	4655														
ggg	aaa	ggg	act	cag	aca	aga	gca	aga	ctt	tgt	aat	aac	cca	cca	cca	14254															
Gly	Lys	Gly	Thr	Gln	Thr	Arg	Ala	Arg	Leu	Cys	Asn	Asn	Pro	Pro	Pro																
															4660	4665	4670	4675													
gcg	ttt	ggg	ggg	tcc	tac	tgt	gat	gga	gca	gaa	aca	cag	atg	caa	gtt	14302															
Ala	Phe	Gly	Gly	Ser	Tyr	Cys	Asp	Gly	Ala	Glu	Thr	Gln	Met	Gln	Val																
															4680	4685	4690														
tgc	aat	gaa	aga	aat	tgt	cca	att	cat	ggc	aag	tgg	gcg	act	tgg	gcc	14350															
Cys	Asn	Glu	Arg	Asn	Cys	Pro	Ile	His	Gly	Lys	Trp	Ala	Thr	Trp	Ala																
															4695	4700	4705														
agt	tgg	agt	gcc	tgt	tct	gtg	tca	tgt	gga	gga	ggg	gcc	aga	cag	aga	14398															
Ser	Trp	Ser	Ala	Cys	Ser	Val	Ser	Cys	Gly	Gly	Gly	Ala	Arg	Gln	Arg																
															4710	4715	4720														
aca	agg	ggc	tgc	tcc	gac	cct	gtg	ccc	cag	tat	gga	gga	agg	aaa	tgc	14446															
Thr	Arg	Gly	Cys	Ser	Asp	Pro	Val	Pro	Gln	Tyr	Gly	Gly	Arg	Lys	Cys																
															4725	4730	4735														
gaa	ggg	agt	gat	gtc	cag	agt	gat	ttt	tgc	aac	agt	gac	cct	tgc	cca	14494															
Glu	Gly	Ser	Asp	Val	Gln	Ser	Asp	Phe	Cys	Asn	Ser	Asp	Pro	Cys	Pro																
															4740	4745	4750	4755													
acc	cat	ggg	aac	tgg	agt	cct	tgg	agt	ggc	tgg	gga	aca	tgc	agc	cgg	14542															
Thr	His	Gly	Asn	Trp	Ser	Pro	Trp	Ser	Gly	Trp	Gly	Thr	Cys	Ser	Arg																
															4760	4765	4770														
acg	tgt	aac	gga	ggg	cag	atg	cgg	cgg	tac	cgc	aca	tgt	gat	aac	cct	14590															
Thr	Cys	Asn	Gly	Gly	Gln	Met	Arg	Arg	Tyr	Arg	Thr	Cys	Asp	Asn	Pro																
															4775	4780	4785														
cct	ccc	tcc	aat	ggg	gga	aga	gct	tgt	ggg	gga	cca	gac	tcc	cag	atc	14638															
Pro	Pro	Ser	Asn	Gly	Gly	Arg	Ala	Cys	Gly	Gly	Pro	Asp	Ser	Gln	Ile																
															4790	4795	4800														
cag	agg	tgc	aac	act	gac	atg	tgt	cct	gtg	gat	gga	agt	tgg	gga	agc	14686															
Gln	Arg	Cys	Asn	Thr	Asp	Met	Cys	Pro	Val	Asp	Gly	Ser	Trp	Gly	Ser																
															4805	4810	4815														
tgg	cat	agt	tgg	agc	cag	tgc	tct	gcc	tcc	tgt	gga	gga	ggg	gaa	aag	14734															
Trp	His	Ser	Trp	Ser	Gln	Cys	Ser	Ala	Ser	Cys	Gly	Gly	Gly	Glu	Lys																
															4820	4825	4830	4835													
act	cgg	aag	cgg	ctg	tgc	gac	cat	cct	gtg	cca	gtt	aaa	ggg	ggc	cgt	14782															
Thr	Arg	Lys	Arg	Leu	Cys	Asp	His	Pro	Val	Pro	Val	Lys	Gly	Gly	Arg																
															4840	4845	4850														
ccc	tgt	ccc	gga	gac	act	act	cag	gtg	acc	agg	tgc	aat	gta	caa	gca	14830															

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Pro	Cys	Pro	Gly	Asp	Thr	Thr	Gln	Val	Thr	Arg	Cys	Asn	Val	Gln	Ala		
			4855					4860					4865				
tgt	cca	ggt	ggg	ccc	cag	cga	gcc	aga	gga	agt	gtt	att	gga	aat	att	14878	
Cys	Pro	Gly	Gly	Pro	Gln	Arg	Ala	Arg	Gly	Ser	Val	Ile	Gly	Asn	Ile		
		4870					4875					4880					
aat	gat	gtt	gaa	ttt	gga	att	gct	ttc	ctt	aat	gcc	aca	ata	act	gat	14926	
Asn	Asp	Val	Glu	Phe	Gly	Ile	Ala	Phe	Leu	Asn	Ala	Thr	Ile	Thr	Asp		
		4885				4890					4895						
agc	cct	aac	tct	gat	act	aga	ata	ata	cgt	gcc	aaa	att	acc	aat	gta	14974	
Ser	Pro	Asn	Ser	Asp	Thr	Arg	Ile	Ile	Arg	Ala	Lys	Ile	Thr	Asn	Val		
4900					4905					4910					4915		
cct	cgt	agt	ctt	ggt	tca	gca	atg	aga	aag	ata	gtt	tct	att	cta	aat	15022	
Pro	Arg	Ser	Leu	Gly	Ser	Ala	Met	Arg	Lys	Ile	Val	Ser	Ile	Leu	Asn		
				4920					4925					4930			
ccc	att	tat	tgg	aca	aca	gca	aag	gaa	ata	gga	gaa	gca	gtc	aat	ggc	15070	
Pro	Ile	Tyr	Trp	Thr	Thr	Ala	Lys	Glu	Ile	Gly	Glu	Ala	Val	Asn	Gly		
			4935					4940					4945				
ttt	acc	ctc	acc	aat	gca	gtc	ttc	aaa	aga	gaa	act	caa	gtg	gaa	ttt	15118	
Phe	Thr	Leu	Thr	Asn	Ala	Val	Phe	Lys	Arg	Glu	Thr	Gln	Val	Glu	Phe		
			4950				4955					4960					
gca	act	gga	gaa	atc	ttg	cag	atg	agt	cat	att	gcc	cgg	ggc	ttg	gat	15166	
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tcc	gat	ggt	tct	ttg	ctg	cta	gat	atc	gtt	gtg	agt	ggc	tat	gtc	cta	15214	
Ser	Asp	Gly	Ser	Leu	Leu	Leu	Asp	Ile	Val	Val	Ser	Gly	Tyr	Val	Leu		
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Gln	Leu	Gln	Ser	Pro	Ala	Glu	Val	Thr	Val	Lys	Asp	Tyr	Thr	Glu	Asp		
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tac	att	caa	aca	ggt	cct	ggg	cag	ctg	tac	gcc	tac	tca	acc	cgg	ctg	15310	
Tyr	Ile	Gln	Thr	Gly	Pro	Gly	Gln	Leu	Tyr	Ala	Tyr	Ser	Thr	Arg	Leu		
			5015					5020					5025				
ttc	acc	att	gat	ggc	atc	agc	atc	cca	tac	aca	tgg	aac	cac	acc	gtt	15358	
Phe	Thr	Ile	Asp	Gly	Ile	Ser	Ile	Pro	Tyr	Thr	Trp	Asn	His	Thr	Val		
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Phe	Tyr	Asp	Gln	Ala	Gln	Gly	Arg	Met	Pro	Phe	Leu	Val	Glu	Thr	Leu		
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cat	gca	tcc	tct	gtg	gaa	tct	gac	tat	aac	cag	ata	gaa	gag	aca	ctg	15454	
His	Ala	Ser	Ser	Val	Glu	Ser	Asp	Tyr	Asn	Gln	Ile	Glu	Glu	Thr	Leu		
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Gly	Phe	Lys	Ile	His	Ala	Ser	Ile	Ser	Lys	Gly	Asp	Arg	Ser	Asn	Gln		
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tgc	ccc	tcc	ggg	ttt	acc	tta	gac	tca	gtt	gga	cct	ttt	tgt	gct	gat	15550	
Cys	Pro	Ser	Gly	Phe	Thr	Leu	Asp	Ser	Val	Gly	Pro	Phe	Cys	Ala	Asp		
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gcc atg ggg act tac tac tgc tcc tgc cct aaa ggc ctc acc ata gct Ala Met Gly Thr Tyr Tyr Cys Ser Cys Pro Lys Gly Leu Thr Ile Ala 5125 5130 5135	15646
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cat acc tgc cac gct ggt cag gac tgt gac aat acg att gga tct tat His Thr Cys His Ala Gly Gln Asp Cys Asp Asn Thr Ile Gly Ser Tyr 5160 5165 5170	15742
cgc tgt gtg gtc cgt tgt gga agt ggc ttt cga aga acc tct gat ggg Arg Cys Val Val Arg Cys Gly Ser Gly Phe Arg Arg Thr Ser Asp Gly 5175 5180 5185	15790
ctg agt tgt caa gat att aat gaa tgt caa gaa tcc agc ccc tgt cac Leu Ser Cys Gln Asp Ile Asn Glu Cys Gln Glu Ser Ser Pro Cys His 5190 5195 5200	15838
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ggg tat cag ctc aaa ggc aga aaa tgc atg gat gtg aac gag tgt aga Gly Tyr Gln Leu Lys Gly Arg Lys Cys Met Asp Val Asn Glu Cys Arg 5220 5225 5230 5235	15934
caa aat gta tgc aga cca gat cag cac tgt aag aac acc cgt ggt ggc Gln Asn Val Cys Arg Pro Asp Gln His Cys Lys Asn Thr Arg Gly Gly 5240 5245 5250	15982
tat aag tgc att gat ctt tgt cca aat gga atg acc aag gca gaa aat Tyr Lys Cys Ile Asp Leu Cys Pro Asn Gly Met Thr Lys Ala Glu Asn 5255 5260 5265	16030
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tta ggg gac ggg aaa tct tgc gct gga ttg gag agg ctg cca aat tat Leu Gly Asp Gly Lys Ser Cys Ala Gly Leu Glu Arg Leu Pro Asn Tyr 5350 5355 5360	16318

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agc tcc tac tca gag tat aga aac agc aga aca tct ctc tcc agg act Ser Ser Tyr Ser Glu Tyr Arg Asn Ser Arg Thr Ser Leu Ser Arg Thr 5400 5405 5410	16462
aga agg act att agg aaa act tgc cct gaa ggc tct gag gca agc cat Arg Arg Thr Ile Arg Lys Thr Cys Pro Glu Gly Ser Glu Ala Ser His 5415 5420 5425	16510
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cat gag tgt aag aat acc ttt gga agt tat cag tgc atc tgc cca cct His Glu Cys Lys Asn Thr Phe Gly Ser Tyr Gln Cys Ile Cys Pro Pro 5445 5450 5455	16606
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5605

5610

5615

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 Tyr Gln Thr Thr Phe Ile Val Tyr Ile Ala Val Ser Ala Tyr Pro Tyr
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taa ggaactctcc aaagcctatt ccacatattt aaaccgcatt aatcatggca 17187

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<210> 2

<211> 5635

<212> PRT

<213> Homo sapiens

<400> 2

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 Tyr Ser Ser Leu Ala Gln Asp Ala Ser Pro Gln Ser Glu Ile Arg Ala
 20 25 30
 Glu Glu Ile Pro Glu Gly Ala Ser Thr Leu Ala Phe Val Phe Asp Val
 35 40 45
 Thr Gly Ser Met Tyr Asp Asp Leu Val Gln Val Ile Glu Gly Ala Ser
 50 55 60
 Lys Ile Leu Glu Thr Ser Leu Lys Arg Pro Lys Arg Pro Leu Phe Asn
 65 70 75 80
 Phe Ala Leu Val Pro Phe His Asp Pro Glu Ile Gly Pro Val Thr Ile
 85 90 95
 Thr Thr Asp Pro Lys Lys Phe Gln Tyr Glu Leu Arg Glu Leu Tyr Val
 100 105 110
 Gln Gly Gly Gly Asp Cys Pro Glu Met Ser Ile Gly Ala Ile Lys Ile
 115 120 125
 Ala Leu Glu Ile Ser Leu Pro Gly Ser Phe Ile Tyr Val Phe Thr Asp
 130 135 140
 Ala Arg Ser Lys Asp Tyr Arg Leu Thr His Glu Val Leu Gln Leu Ile
 145 150 155 160
 Gln Gln Lys Gln Ser Gln Val Val Phe Val Leu Thr Gly Asp Cys Asp
 165 170 175
 Asp Arg Thr His Ile Gly Tyr Lys Val Tyr Glu Glu Ile Ala Ser Thr
 180 185 190
 Ser Ser Gly Gln Val Phe His Leu Asp Lys Lys Gln Val Asn Glu Val
 195 200 205
 Leu Lys Trp Val Glu Glu Ala Val Gln Ala Ser Lys Val His Leu Leu
 210 215 220
 Ser Thr Asp His Leu Glu Gln Ala Val Asn Thr Trp Arg Ile Pro Phe

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225	Asp	Pro	Ser	Leu	Lys	230	Glu	Val	Thr	Val	Ser	235	Leu	Ser	Gly	Pro	Ser	240	Pro
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	Gly	Leu	His	Glu	Leu	Leu	Asn	Ile	His	Asn	Ser	Ala	Lys	Val	Val	Asn			
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	Val	Lys	Glu	Pro	Glu	Ala	Gly	Met	Trp	Thr	Val	Lys	Thr	Ser	Ser	Ser			
		290					295					300							
	Gly	Arg	His	Ser	Val	Arg	Ile	Thr	Gly	Leu	Ser	Thr	Ile	Asp	Phe	Arg			
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	Arg	Pro	Val	Gln	Gly	Ile	Pro	Thr	Tyr	Val	Leu	Leu	Asn	Thr	Ser	Gly			
			340						345					350					
	Ile	Ser	Thr	Pro	Ala	Arg	Ile	Asp	Leu	Leu	Glu	Leu	Leu	Ser	Ile	Ser			
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	Gly	Ser	Ser	Leu	Lys	Thr	Ile	Pro	Val	Lys	Tyr	Tyr	Pro	His	Arg	Lys			
		370				375						380							
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	Phe	Phe	Leu	Lys	Val	Thr	Gly	Tyr	Asp	Lys	Asp	Asp	Tyr	Leu	Phe	Gln			
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				420					425					430					
	Val	Thr	Met	Pro	Glu	Lys	Thr	Pro	Gly	Tyr	Tyr	Leu	Gln	Pro	Gly	Gln			
			435					440					445						
	Ile	Pro	Cys	Ser	Val	Asp	Ser	Leu	Leu	Pro	Phe	Thr	Leu	Ser	Phe	Val			
		450				455						460							
	Arg	Asn	Gly	Val	Thr	Leu	Gly	Val	Asp	Gln	Tyr	Leu	Lys	Glu	Ser	Ala			
465						470					475					480			
	Ser	Val	Asn	Leu	Asp	Ile	Ala	Lys	Val	Thr	Leu	Ser	Asp	Glu	Gly	Phe			
				485						490					495				
	Tyr	Glu	Cys	Ile	Ala	Val	Ser	Ser	Ala	Gly	Thr	Gly	Arg	Ala	Gln	Thr			
			500						505					510					
	Phe	Phe	Asp	Val	Ser	Glu	Pro	Pro	Val	Ile	Gln	Val	Pro	Asn	Asn				
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	Val	Thr	Val	Thr	Pro	Gly	Glu	Arg	Ala	Val	Leu	Thr	Cys	Leu	Ile	Ile			
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	Ser	Ala	Val	Asp	Tyr	Asn	Leu	Thr	Trp	Gln	Arg	Asn	Asp	Arg	Asp	Val			
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	Glu	Leu	Lys	Ser	Val	Lys	Phe	Asn	Asp	Ala	Gly	Glu	Tyr	His	Cys	Met			
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	Val	Ser	Ser	Glu	Gly	Gly	Ser	Ser	Ala	Ala	Ser	Val	Phe	Leu	Thr	Val			
			595					600					605						
	Gln	Glu	Pro	Pro	Lys	Val	Thr	Val	Met	Pro	Lys	Asn	Gln	Ser	Phe	Thr			
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	Gly	Gly	Ser	Glu	Val	Ser	Ile	Met	Cys	Ser	Ala	Thr	Gly	Tyr	Pro	Lys			
625						630					635					640			
	Pro	Lys	Ile	Ala	Trp	Thr	Val	Asn	Asp	Met	Phe	Ile	Val	Gly	Ser	His			
				645						650					655				
	Arg	Tyr	Arg	Met	Thr	Ser	Asp	Gly	Thr	Leu	Phe	Ile	Lys	Asn	Ala	Ala			
			660					665						670					
	Pro	Lys	Asp	Ala	Gly	Ile	Tyr	Gly	Cys	Leu	Ala	Ser	Asn	Ser	Ala	Gly			
			675					680					685						
	Thr	Asp	Lys	Gln	Asn	Ser	Thr	Leu	Arg	Tyr	Ile	Glu	Ala	Pro	Lys	Leu			
		690				695						700							
	Met	Val	Val	Gln	Ser	Glu	Leu	Leu	Val	Ala	Leu	Gly	Asp	Ile	Thr	Val			
705						710					715					720			
	Met	Glu	Cys	Lys	Thr	Ser	Gly	Ile	Pro	Pro	Pro	Gln	Val	Lys	Trp	Phe			
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Lys Gly Asp Leu Glu Leu Arg Pro Ser Thr Phe Leu Ile Ile Asp Pro
 740 745 750
 Leu Leu Gly Leu Leu Lys Ile Gln Glu Thr Gln Asp Leu Asp Ala Gly
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 Asp Tyr Thr Cys Val Ala Ile Asn Glu Ala Gly Arg Ala Thr Gly Lys
 770 775 780
 Ile Thr Leu Asp Val Gly Ser Pro Pro Val Phe Ile Gln Glu Pro Ala
 785 790 795 800
 Asp Val Ser Met Glu Ile Gly Ser Asn Val Thr Leu Pro Cys Tyr Val
 805 810 815
 Gln Gly Tyr Pro Glu Pro Thr Ile Lys Trp Arg Arg Leu Asp Asn Met
 820 825 830
 Pro Ile Phe Ser Arg Pro Phe Ser Val Ser Ser Ile Ser Gln Leu Arg
 835 840 845
 Thr Gly Ala Leu Phe Ile Leu Asn Leu Trp Ala Ser Asp Lys Gly Thr
 850 855 860
 Tyr Ile Cys Glu Ala Glu Asn Gln Phe Gly Lys Ile Gln Ser Glu Thr
 865 870 875 880
 Thr Val Thr Val Thr Gly Leu Val Ala Pro Leu Ile Gly Ile Ser Pro
 885 890 895
 Ser Val Ala Asn Val Ile Glu Gly Gln Gln Leu Thr Leu Pro Cys Thr
 900 905 910
 Leu Leu Ala Gly Asn Pro Ile Pro Glu Arg Arg Trp Ile Lys Asn Ser
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 Ala Met Leu Leu Gln Asn Pro Tyr Ile Thr Val Arg Ser Asp Gly Ser
 930 935 940
 Leu His Ile Glu Arg Val Gln Leu Gln Asp Gly Gly Glu Tyr Thr Cys
 945 950 955 960
 Val Ala Ser Asn Val Ala Gly Thr Asn Asn Lys Thr Thr Ser Val Val
 965 970 975
 Val His Val Leu Pro Thr Ile Gln His Gly Gln Gln Ile Leu Ser Thr
 980 985 990
 Ile Glu Gly Ile Pro Val Thr Leu Pro Cys Lys Ala Ser Gly Asn Pro
 995 1000 1005
 Lys Pro Ser Val Ile Trp Ser Lys Lys Gly Glu Leu Ile Ser Thr Ser
 1010 1015 1020
 Ser Ala Lys Phe Ser Ala Gly Ala Asp Gly Ser Leu Tyr Val Val Ser
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 Pro Gly Gly Glu Glu Ser Gly Glu Tyr Val Cys Thr Ala Thr Asn Thr
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 Arg Val Phe Gly Asp Gln Arg Gly Leu Ser Gln Asp Lys Pro Val Glu
 1075 1080 1085
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 Ser Pro Phe Ser Pro Arg His Thr Phe Leu Pro Ser Gly Ser Met Lys
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 1170 1175 1180
 Gly Gln Arg Val Asp Ile Pro Cys Asn Ala Gln Gly Thr Pro Leu Pro
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 Val Ile Thr Trp Ser Lys Gly Gly Ser Thr Met Leu Val Asp Gly Glu
 1205 1210 1215
 His His Val Ser Asn Pro Asp Gly Thr Leu Ser Ile Asp Gln Ala Thr
 1220 1225 1230
 Pro Ser Asp Ala Gly Ile Tyr Thr Cys Val Ala Thr Asn Ile Ala Gly

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 Asn Gln Arg Ile Glu Phe Pro Cys Pro Ala Lys Gly Thr Pro Lys Pro
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 Thr Ile Lys Trp Leu His Asn Gly Arg Glu Leu Thr Gly Arg Glu Pro
 1300 1305 1310
 Gly Ile Ser Ile Leu Glu Asp Gly Thr Leu Leu Val Ile Ala Ser Val
 1315 1320 1325
 Thr Pro Tyr Asp Asn Gly Glu Tyr Ile Cys Val Ala Val Asn Glu Ala
 1330 1335 1340
 Gly Thr Thr Glu Arg Lys Tyr Asn Leu Lys Val His Val Pro Pro Val
 1345 1350 1355 1360
 Ile Lys Asp Lys Glu Gln Val Thr Asn Val Ser Val Leu Leu Asn Gln
 1365 1370 1375
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 1380 1385 1390
 Met Trp Tyr Lys Asp Asn Val Gln Val Thr Glu Ser Ser Thr Ile Gln
 1395 1400 1405
 Thr Val Asn Asn Gly Lys Ile Leu Lys Leu Phe Arg Ala Thr Pro Glu
 1410 1415 1420
 Asp Ala Gly Arg Tyr Ser Cys Lys Ala Ile Asn Ile Ala Gly Thr Ser
 1425 1430 1435 1440
 Gln Lys Tyr Phe Asn Ile Asp Val Leu Val Pro Pro Thr Ile Ile Gly
 1445 1450 1455
 Thr Asn Phe Pro Asn Glu Val Ser Val Val Leu Asn Arg Asp Val Ala
 1460 1465 1470
 Leu Glu Cys Gln Val Lys Gly Thr Pro Phe Pro Asp Ile His Trp Phe
 1475 1480 1485
 Lys Asp Gly Lys Pro Leu Phe Leu Gly Asp Pro Asn Val Glu Leu Leu
 1490 1495 1500
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 1505 1510 1515 1520
 Gly Arg Tyr Gln Cys Thr Val Ser Asn Ala Ala Gly Lys Gln Ala Lys
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 Asp Ile Lys Leu Thr Ile Tyr Asn Pro Pro Ser Ile Lys Gly Gly Asn
 1540 1545 1550
 Val Thr Thr Asp Ile Ser Val Leu Ile Asn Ser Leu Ile Lys Leu Glu
 1555 1560 1565
 Cys Glu Thr Arg Gly Leu Pro Met Pro Ala Ile Thr Trp Tyr Lys Asp
 1570 1575 1580
 Gly Gln Pro Ile Met Ser Ser Ser Gln Ala Leu Tyr Ile Asp Lys Gly
 1585 1590 1595 1600
 Gln Tyr Leu His Ile Pro Arg Ala Gln Val Ser Asp Ser Ala Thr Tyr
 1605 1610 1615
 Thr Cys His Val Ala Asn Val Ala Gly Thr Ala Glu Lys Ser Phe His
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 Val Asp Val Tyr Val Pro Pro Met Ile Glu Gly Asn Leu Ala Thr Pro
 1635 1640 1645
 Leu Asn Lys Gln Val Val Ile Ala His Ser Leu Thr Leu Glu Cys Lys
 1650 1655 1660
 Ala Ala Gly Asn Pro Ser Pro Ile Leu Thr Trp Leu Lys Asp Gly Val
 1665 1670 1675 1680
 Pro Val Lys Ala Asn Asp Asn Ile Arg Ile Glu Ala Gly Gly Lys Lys
 1685 1690 1695
 Leu Glu Ile Met Ser Ala Gln Glu Ile Asp Arg Gly Gln Tyr Ile Cys
 1700 1705 1710
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 1715 1720 1725
 Val Leu Val Pro Pro Ala Ile Glu Gly Gly Asp Glu Thr Ser Tyr Phe
 1730 1735 1740

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Ile Val Met Val Asn Asn Leu Leu Glu Leu Asp Cys His Val Thr Gly
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 Ser Pro Pro Pro Thr Ile Met Trp Leu Lys Asp Gly Gln Leu Ile Asp
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 Glu Arg Asp Gly Phe Lys Ile Leu Leu Asn Gly Arg Lys Leu Val Ile
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 Ala Gln Ala Gln Val Ser Asn Thr Gly Leu Tyr Arg Cys Met Ala Ala
 1795 1800 1805
 Asn Thr Ala Gly Asp His Lys Lys Glu Phe Glu Val Thr Val His Val
 1810 1815 1820
 Pro Pro Thr Ile Lys Ser Ser Gly Leu Ser Glu Arg Val Val Val Lys
 1825 1830 1835 1840
 Tyr Lys Pro Val Ala Leu Gln Cys Ile Ala Asn Gly Ile Pro Asn Pro
 1845 1850 1855
 Ser Ile Thr Trp Leu Lys Asp Asp Gln Pro Val Asn Thr Ala Gln Gly
 1860 1865 1870
 Asn Leu Lys Ile Gln Ser Ser Gly Arg Val Leu Gln Ile Ala Lys Thr
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 Leu Leu Glu Asp Ala Gly Arg Tyr Thr Cys Val Ala Thr Asn Ala Ala
 1890 1895 1900
 Gly Glu Thr Gln Gln His Ile Gln Leu His Val His Glu Pro Pro Ser
 1905 1910 1915 1920
 Leu Glu Asp Ala Gly Lys Met Leu Asn Glu Thr Val Leu Val Ser Asn
 1925 1930 1935
 Pro Val Gln Leu Glu Cys Lys Ala Ala Gly Asn Pro Val Pro Val Ile
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 Thr Trp Tyr Lys Asp Asn Arg Leu Leu Ser Gly Ser Thr Ser Met Thr
 1955 1960 1965
 Phe Leu Asn Arg Gly Gln Ile Ile Asp Ile Glu Ser Ala Gln Ile Ser
 1970 1975 1980
 Asp Ala Gly Ile Tyr Lys Cys Val Ala Ile Asn Ser Ala Gly Ala Thr
 1985 1990 1995 2000
 Glu Leu Phe Tyr Ser Leu Gln Val His Val Ala Pro Ser Ile Ser Gly
 2005 2010 2015
 Ser Asn Asn Met Val Ala Val Val Val Asn Asn Pro Val Arg Leu Glu
 2020 2025 2030
 Cys Glu Ala Arg Gly Ile Pro Ala Pro Ser Leu Thr Trp Leu Lys Asp
 2035 2040 2045
 Gly Ser Pro Val Ser Ser Phe Ser Asn Gly Leu Gln Val Leu Ser Gly
 2050 2055 2060
 Gly Arg Ile Leu Ala Leu Thr Ser Ala Gln Ile Ser Asp Thr Gly Arg
 2065 2070 2075 2080
 Tyr Thr Cys Val Ala Val Asn Ala Ala Gly Glu Lys Gln Arg Asp Ile
 2085 2090 2095
 Asp Leu Arg Val Tyr Val Pro Pro Asn Ile Met Gly Glu Glu Gln Asn
 2100 2105 2110
 Val Ser Val Leu Ile Ser Gln Ala Val Glu Leu Leu Cys Gln Ser Asp
 2115 2120 2125
 Ala Ile Pro Pro Pro Thr Leu Thr Trp Leu Lys Asp Gly His Pro Leu
 2130 2135 2140
 Leu Lys Lys Pro Gly Leu Ser Ile Ser Glu Asn Arg Ser Val Leu Lys
 2145 2150 2155 2160
 Ile Glu Asp Ala Gln Val Gln Asp Thr Gly Arg Tyr Thr Cys Glu Ala
 2165 2170 2175
 Thr Asn Val Ala Gly Lys Thr Glu Lys Asn Tyr Asn Val Asn Ile Trp
 2180 2185 2190
 Val Pro Pro Asn Ile Gly Gly Ser Asp Glu Leu Thr Gln Leu Thr Val
 2195 2200 2205
 Ile Glu Gly Asn Leu Ile Ser Leu Leu Cys Glu Ser Ser Gly Ile Pro
 2210 2215 2220
 Pro Pro Asn Leu Ile Trp Lys Lys Lys Gly Ser Pro Val Leu Thr Asp
 2225 2230 2235 2240
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 Asn Val Ala Gly Thr Ala Lys Lys Glu Tyr Asn Leu Gln Val Tyr Ile
 2260 2265 2270
 Arg Pro Thr Ile Thr Asn Ser Gly Ser His Pro Thr Glu Ile Ile Val
 2275 2280 2285
 Thr Arg Gly Lys Ser Ile Ser Leu Glu Cys Glu Val Gln Gly Ile Pro
 2290 2295 2300
 Pro Pro Thr Val Thr Trp Met Lys Asp Gly His Pro Leu Ile Lys Ala
 2305 2310 2315 2320
 Lys Gly Val Glu Ile Leu Asp Glu Gly His Ile Leu Gln Leu Lys Asn
 2325 2330 2335
 Ile His Val Ser Asp Thr Gly Arg Tyr Val Cys Val Ala Val Asn Val
 2340 2345 2350
 Ala Gly Met Thr Asp Lys Lys Tyr Asp Leu Ser Val His Ala Pro Pro
 2355 2360 2365
 Ser Ile Ile Gly Asn His Arg Ser Pro Glu Asn Ile Ser Val Val Glu
 2370 2375 2380
 Lys Asn Ser Val Ser Leu Thr Cys Glu Ala Ser Gly Ile Pro Leu Pro
 2385 2390 2395 2400
 Ser Ile Thr Trp Phe Lys Asp Gly Trp Pro Val Ser Leu Ser Asn Ser
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 2420 2425 2430
 Met Glu Asp Ala Gly Gln Tyr Thr Cys Val Val Arg Asn Ala Ala Gly
 2435 2440 2445
 Glu Glu Arg Lys Ile Phe Gly Leu Ser Val Leu Val Pro Pro His Ile
 2450 2455 2460
 Val Gly Glu Asn Thr Leu Glu Asp Val Lys Val Lys Glu Lys Gln Ser
 2465 2470 2475 2480
 Val Thr Leu Thr Cys Glu Val Thr Gly Asn Pro Val Pro Glu Ile Thr
 2485 2490 2495
 Trp His Lys Asp Gly Gln Pro Leu Gln Glu Asp Glu Ala His His Ile
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 Ile Ser Gly Gly Arg Phe Leu Gln Ile Thr Asn Val Gln Val Pro His
 2515 2520 2525
 Thr Gly Arg Tyr Thr Cys Leu Ala Ser Ser Pro Ala Gly His Lys Ser
 2530 2535 2540
 Arg Ser Phe Ser Leu Asn Val Phe Val Ser Pro Thr Ile Ala Gly Val
 2545 2550 2555 2560
 Gly Ser Asp Gly Asn Pro Glu Asp Val Thr Val Ile Leu Asn Ser Pro
 2565 2570 2575
 Thr Ser Leu Val Cys Glu Ala Tyr Ser Tyr Pro Pro Ala Thr Ile Thr
 2580 2585 2590
 Trp Phe Lys Asp Gly Thr Pro Leu Glu Ser Asn Arg Asn Ile Arg Ile
 2595 2600 2605
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 2625 2630 2635 2640
 Lys His Tyr Glu Val Lys Val Tyr Ile Pro Pro Ile Ile Asn Lys Gly
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 Asp Leu Trp Gly Pro Gly Leu Ser Pro Lys Glu Val Lys Ile Lys Val
 2660 2665 2670
 Asn Asn Thr Leu Thr Leu Glu Cys Glu Ala Tyr Ala Ile Pro Ser Ala
 2675 2680 2685
 Ser Leu Ser Trp Tyr Lys Asp Gly Gln Pro Leu Lys Ser Asp Asp His
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 Val Asn Ile Ala Ala Asn Gly His Thr Leu Gln Ile Lys Glu Ala Gln
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 Ile Ser Asp Thr Gly Arg Tyr Thr Cys Val Ala Ser Asn Ile Ala Gly
 2725 2730 2735
 2740 2745 2750

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 Glu Ala Lys Asp Val Ile Ile Asn Asn Pro Ile Ser Leu Tyr Cys Glu
 2785 2790 2795 2800
 Thr Asn Ala Ala Pro Pro Thr Leu Thr Trp Tyr Lys Asp Gly His
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 Pro Leu Thr Ser Ser Asp Lys Val Leu Ile Leu Pro Gly Gly Arg Val
 2820 2825 2830
 Leu Gln Ile Pro Arg Ala Lys Val Glu Asp Ala Gly Arg Tyr Thr Cys
 2835 2840 2845
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 2850 2855 2860
 Val Leu Val Pro Pro Ile Ile Lys Gly Ala Asn Ser Asp Leu Pro Glu
 2865 2870 2875 2880
 Glu Val Thr Val Leu Val Asn Lys Ser Ala Leu Ile Glu Cys Leu Ser
 2885 2890 2895
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 2930 2935 2940
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 2965 2970 2975
 Val Val Asn Asn Phe Ile Ser Leu Thr Cys Glu Val Ser Gly Phe Pro
 2980 2985 2990
 Pro Pro Asp Leu Ser Trp Leu Lys Asn Glu Gln Pro Ile Lys Leu Asn
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 3025 3030 3035 3040
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 3075 3080 3085
 Pro Val Ile Thr Trp Tyr Lys Asn Gly Arg Met Ile Thr Glu Ser Thr
 3090 3095 3100
 His Val Glu Ile Leu Ala Asp Gly Gln Met Leu His Ile Lys Lys Ala
 3105 3110 3115 3120
 Glu Val Ser Asp Thr Gly Gln Tyr Val Cys Arg Ala Ile Asn Val Ala
 3125 3130 3135
 Gly Arg Asp Asp Lys Asn Phe His Leu Asn Val Tyr Val Pro Pro Ser
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 Ile Glu Gly Pro Glu Arg Glu Val Ile Val Glu Thr Ile Ser Asn Pro
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 Val Thr Leu Thr Cys Asp Ala Thr Gly Ile Pro Pro Thr Ile Ala
 3170 3175 3180
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 3185 3190 3195 3200
 Arg Ile Leu Ser Gly Gly Ser Lys Leu Gln Ile Ala Arg Ser Gln His
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 3220 3225 3230
 Ala Gln Lys Tyr Tyr Phe Leu Ser Ile Gln Val Pro Pro Ser Val Ala
 3235 3240 3245
 Gly Ala Glu Ile Pro Ser Asp Val Ser Val Leu Leu Gly Glu Asn Val

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 3285 3290 3295
 Val Ser Ala Asn Gly Ser Thr Leu Asn Ile Tyr Gly Ala Leu Thr Ser
 3300 3305 3310
 Asp Thr Gly Lys Tyr Thr Cys Val Ala Thr Asn Pro Ala Gly Glu Glu
 3315 3320 3325
 Asp Arg Ile Phe Asn Leu Asn Val Tyr Val Thr Pro Thr Ile Arg Gly
 3330 3335 3340
 Asn Lys Asp Glu Ala Glu Lys Leu Met Thr Leu Val Asp Thr Ser Ile
 3345 3350 3355 3360
 Asn Ile Glu Cys Arg Ala Thr Gly Thr Pro Pro Pro Gln Ile Asn Trp
 3365 3370 3375
 Leu Lys Asn Gly Leu Pro Leu Pro Leu Ser Ser His Ile Arg Leu Leu
 3380 3385 3390
 Ala Ala Gly Gln Val Ile Arg Ile Val Arg Ala Gln Val Ser Asp Val
 3395 3400 3405
 Ala Val Tyr Thr Cys Val Ala Ser Asn Arg Ala Gly Val Asp Asn Lys
 3410 3415 3420
 His Tyr Asn Leu Gln Val Phe Ala Pro Pro Asn Met Asp Asn Ser Met
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 Gly Thr Glu Glu Ile Thr Val Leu Lys Gly Ser Ser Thr Ser Met Ala
 3445 3450 3455
 Cys Ile Thr Asp Gly Thr Pro Ala Pro Ser Met Ala Trp Leu Arg Asp
 3460 3465 3470
 Gly Gln Pro Leu Gly Leu Asp Ala His Leu Thr Val Ser Thr His Gly
 3475 3480 3485
 Met Val Leu Gln Leu Leu Lys Ala Glu Thr Glu Asp Ser Gly Lys Tyr
 3490 3495 3500
 Thr Cys Ile Ala Ser Asn Glu Ala Gly Glu Val Ser Lys His Phe Ile
 3505 3510 3515 3520
 Leu Lys Val Leu Glu Pro Pro His Ile Asn Gly Ser Glu Glu His Glu
 3525 3530 3535
 Glu Ile Ser Val Ile Val Asn Asn Pro Leu Glu Leu Thr Cys Ile Ala
 3540 3545 3550
 Ser Gly Ile Pro Ala Pro Lys Met Thr Trp Met Lys Asp Gly Arg Pro
 3555 3560 3565
 Leu Pro Gln Thr Asp Gln Val Gln Thr Leu Gly Gly Gly Glu Val Leu
 3570 3575 3580
 Arg Ile Ser Thr Ala Gln Val Glu Asp Thr Gly Arg Tyr Thr Cys Leu
 3585 3590 3595 3600
 Ala Ser Ser Pro Ala Gly Asp Asp Asp Lys Glu Tyr Leu Val Arg Val
 3605 3610 3615
 His Val Pro Pro Asn Ile Ala Gly Thr Asp Glu Pro Arg Asp Ile Thr
 3620 3625 3630
 Val Leu Arg Asn Arg Gln Val Thr Leu Glu Cys Lys Ser Asp Ala Val
 3635 3640 3645
 Pro Pro Pro Val Ile Thr Trp Leu Arg Asn Gly Glu Arg Leu Gln Ala
 3650 3655 3660
 Thr Pro Arg Val Arg Ile Leu Ser Gly Gly Arg Tyr Leu Gln Ile Asn
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 Asn Ala Asp Leu Gly Asp Thr Ala Asn Tyr Thr Cys Val Ala Ser Asn
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 Ile Ala Gly Lys Thr Thr Arg Glu Phe Ile Leu Thr Val Asn Val Pro
 3700 3705 3710
 Pro Asn Ile Lys Gly Gly Pro Gln Ser Leu Val Ile Leu Leu Asn Lys
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 Ser Thr Val Leu Glu Cys Ile Ala Glu Gly Val Pro Thr Pro Arg Ile
 3730 3735 3740
 Thr Trp Arg Lys Asp Gly Ala Val Leu Ala Gly Asn His Ala Arg Tyr
 3745 3750 3755 3760

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 3765 3770 3775
 Asp Thr Gly Arg Tyr Leu Cys Met Ala Thr Asn Ala Ala Gly Thr Asp
 3780 3785 3790
 Arg Arg Arg Ile Asp Leu Gln Val His Val Pro Pro Ser Ile Ala Pro
 3795 3800 3805
 Gly Pro Thr Asn Met Thr Val Ile Val Asn Val Gln Thr Thr Leu Ala
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 Cys Glu Ala Thr Gly Ile Pro Lys Pro Ser Ile Asn Trp Arg Lys Asn
 3825 3830 3835 3840
 Gly His Leu Leu Asn Val Asp Gln Asn Gln Asn Ser Tyr Arg Leu Leu
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 Ser Ser Gly Ser Leu Val Ile Ile Ser Pro Ser Val Asp Asp Thr Ala
 3860 3865 3870
 Thr Tyr Glu Cys Thr Val Thr Asn Gly Ala Gly Asp Asp Lys Arg Thr
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 Val Asp Leu Thr Val Gln Val Pro Pro Ser Ile Ala Asp Glu Pro Thr
 3890 3895 3900
 Asp Phe Leu Val Thr Lys His Ala Pro Ala Val Ile Thr Cys Thr Ala
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 Ser Gly Val Pro Phe Pro Ser Ile His Trp Thr Lys Asn Gly Ile Arg
 3925 3930 3935
 Leu Leu Pro Arg Gly Asp Gly Tyr Arg Ile Leu Ser Ser Gly Ala Ile
 3940 3945 3950
 Glu Ile Leu Ala Thr Gln Leu Asn His Ala Gly Arg Tyr Thr Cys Val
 3955 3960 3965
 Ala Arg Asn Ala Ala Gly Ser Ala His Arg His Val Thr Leu His Val
 3970 3975 3980
 His Glu Pro Pro Val Ile Gln Pro Gln Pro Ser Glu Leu His Val Ile
 3985 3990 3995 4000
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 Pro Phe Ile Thr Trp Gln Lys Glu Gly Ile Asn Val Asn Thr Ser Gly
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 Arg Asn His Ala Val Leu Pro Ser Gly Gly Leu Gln Ile Ser Arg Ala
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 Val Arg Glu Asp Ala Gly Thr Tyr Met Cys Val Ala Gln Asn Pro Ala
 4050 4055 4060
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 Thr Leu Ser Cys Glu Ala Asp Gly Leu Pro Pro Pro Asp Ile Thr Trp
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 His Lys Asp Gly Arg Ala Ile Val Glu Ser Ile Arg Gln Arg Val Leu
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 Ser Ser Gly Ser Leu Gln Ile Ala Phe Val Gln Pro Gly Asp Ala Gly
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 His Tyr Thr Cys Met Ala Ala Asn Val Ala Gly Ser Ser Ser Thr Ser
 4145 4150 4155 4160
 Thr Lys Leu Thr Val His Val Pro Pro Arg Ile Arg Ser Thr Glu Gly
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 His Tyr Thr Val Asn Glu Asn Ser Gln Ala Ile Leu Pro Cys Val Ala
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 Asp Gly Ile Pro Thr Pro Ala Ile Asn Trp Lys Lys Asp Asn Val Leu
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 Leu Ala Asn Leu Leu Gly Lys Tyr Thr Ala Glu Pro Tyr Gly Glu Leu
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 His Val Leu Pro Thr Phe Thr Glu Leu Pro Gly Asp Val Ser Leu Asn

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4260 4265 4270
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 4290 4295 4300
 Asp Ser Val Asn Gly His Ser Glu Leu Val Ile Glu Arg Val Ser Lys
 4305 4310 4315 4320
 Glu Asp Ser Gly Thr Tyr Val Cys Thr Ala Glu Asn Ser Val Gly Phe
 4325 4330 4335
 Val Lys Ala Ile Gly Phe Val Tyr Val Lys Glu Pro Pro Val Phe Lys
 4340 4345 4350
 Gly Asp Tyr Pro Ser Asn Trp Ile Glu Pro Leu Gly Gly Asn Ala Ile
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 Arg Lys Gly Val Asp Ile Glu Ile Ser His Arg Ile Arg Gln Leu Gly
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 Thr Val Ile Asn Ala Gly Gly Lys Ile Ile Leu Asn Cys Gln Ala Thr
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 Ser Trp Asp Asp Arg Val Asn Val Leu Ser Asn Asn Ser Leu Tyr Ile
 4485 4490 4495
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 4515 4520 4525
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 Cys Gly Lys Gly Ile Gln Lys Arg Ser Arg Leu Cys Asn Gln Pro Leu
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 4565 4570 4575
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 Pro Cys Pro Thr His Gly Asn Trp Ser Pro Trp Ser Gly Trp Gly Thr
 4755 4760 4765

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Cys Ser Arg Thr Cys Asn Gly Gly Gln Met Arg Arg Tyr Arg Thr Cys
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 Cys Met Asp Ile Asn Glu Cys Glu Gln Val Pro Lys Pro Cys Ala His
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 Gln Cys Ser Asn Thr Pro Gly Ser Phe Lys Cys Ile Cys Pro Pro Gly
 5330 5335 5340
 Gln His Leu Leu Gly Asp Gly Lys Ser Cys Ala Gly Leu Glu Arg Leu
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 Pro Val Arg Asn Asn Tyr Gln Pro Gln Gln His Tyr Arg Gln Tyr Ser
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 His Leu Tyr Ser Ser Tyr Ser Glu Tyr Arg Asn Ser Arg Thr Ser Leu
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 Ser Arg Thr Arg Arg Thr Ile Arg Lys Thr Cys Pro Glu Gly Ser Glu
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 Ala Ser His Asp Thr Cys Val Asp Ile Asp Glu Cys Glu Asn Thr Asp
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 Ala Cys Gln His Glu Cys Lys Asn Thr Phe Gly Ser Tyr Gln Cys Ile
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 Cys Pro Pro Gly Tyr Gln Leu Thr His Asn Gly Lys Thr Cys Gln Asp
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 Ile Asp Glu Cys Leu Glu Gln Asn Val His Cys Gly Pro Asn Arg Met
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 Pro Asn Tyr Gln Arg Asp Pro Val Ser Gly Phe Cys Leu Lys Asn Cys
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 Lys Leu Val Ser Leu Pro Phe Gly Ile Ala Thr Asn Gln Asp Leu Ile
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 Arg Leu Val Ala Tyr Thr Gln Asp Gly Val Met His Pro Arg Thr Thr
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 Glu Asn Leu Lys Gly Val Val Tyr Thr Thr Arg Pro Leu Arg Glu Ala
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 Glu Thr Tyr Arg Met Arg Val Arg Ala Ser Ser Tyr Ser Ala Asn Gly
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 Thr Ile Glu Tyr Gln Thr Thr Phe Ile Val Tyr Ile Ala Val Ser Ala
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 Tyr Pro Tyr
 5635

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<220>
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 <211> 20
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 <220>
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 <220>
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 ASO assay

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 ASO assay

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 <210> 7
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 cDNA sequence (SEQ ID NO:1)

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 <210> 8
 <211> 17
 <212> DNA
 <213> Artificial Sequence

 <220>
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 cDNA sequence (SEQ ID NO:1)

 <400> 8
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 <210> 9

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<211> 21
 <212> DNA
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 <220>
 <223> FIBL-6 exon 103-specific common upstream forward
 primer used to differentiate alternative splicing
 involving exon 104

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 <220>
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 involving exon 104

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 <210> 11
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 <220>
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 primer used to differentiate alternative splicing
 involving exon 104

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 <210> 12
 <211> 15
 <212> DNA
 <213> Artificial Sequence

 <220>
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 <210> 13
 <211> 15
 <212> DNA
 <213> Artificial Sequence

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 <210> 14

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 <213> Artificial Sequence

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 <213> Artificial Sequence

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 16,263 of SEQ ID NO:1

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16,263 of SEQ ID NO:1

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<212> PRT

<213> Homo sapiens

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Asp	Ile	Asn	Glu	Cys	Glu	Gln	Val	Pro	Lys	Pro	Cys	Ala	His	Gln	Cys
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Ser	Asn	Thr	Pro	Gly	Ser	Phe	Lys	Cys	Ile	Cys	Pro	Pro	Gly	Gln	His
			20					25					30		
Leu	Leu	Gly	Asp	Gly	Lys	Ser	Cys	Ala							
		35					40								

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<212> PRT

<213> Mus musculus

<400> 179

Asp	Ile	Asn	Glu	Cys	Glu	Gln	Val	Pro	Lys	Pro	Cys	Ala	His	Gln	Cys
1				5					10					15	
Ser	Asn	Ser	Pro	Gly	Ser	Phe	Lys	Cys	Ile	Cys	Leu	Pro	Gly	Gln	Gln
			20					25					30		
Leu	Leu	Gly	Asp	Gly	Lys	Ser	Cys	Ala							
		35					40								

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<212> PRT

<213> Sus scrofa

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Ile	Asn	Glu	Cys	Glu	Gln	Val	Pro	Lys	Pro	Cys	Ala	Tyr	Gln	Cys	Ser
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Asn	Thr	Pro	Gly	Ser	Phe	Lys	Cys	Ile	Cys	Pro	Pro	Gly	Gln	His	Leu
			20					25					30		
Leu	Gly	Asp	Gly	Lys	Ser	Cys	Ala								
		35					40								

<210> 181

<211> 30

<212> PRT

<213> Rattus norvegicus

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Cys Ala His Gln Cys Ser Asn Ser Pro Gly Ser Phe Lys Cys Ile Cys

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Leu Pro Gly Gln His Leu Leu Gly Asp Gly Lys Ser Cys Ala
20 25 30

<210> 182
<211> 24
<212> PRT
<213> *Felis domestica*

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Leu Gly Asp Gly Lys Ser Cys Ala
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<213> *Canis familiaris*

<400> 183
Cys Ala Tyr Gln Cys Ser Asn Thr Pro Gly Ser Phe Lys Cys Ile Cys
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Pro Pro Gly Gln His Leu Leu Gly Asp Gly Lys Ser Cys Ala
20 25 30

<210> 184
<211> 25
<212> PRT
<213> *Ovis aries*

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Phe Asn Thr Pro Gly Ser Phe Lys Cys Ile Cys Pro Pro Gly Gln His
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Leu Leu Gly Asp Gly Lys Ser Cys Ala
20 25

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<211> 23
<212> PRT
<213> *Oryctolagus cuniculus*

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Thr Pro Gly Ser Phe Lys Cys Thr Cys Pro Pro Gly Gln His Leu Leu
1 5 10 15
Gly Asp Gly Lys Ser Cys Ala
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<210> 186
<211> 30
<212> PRT
<213> *Gallus gallus*

<400> 186
Cys Ala Phe Gln Cys Thr Asn Thr Pro Gly Ser Phe Lys Cys Ile Cys
1 5 10 15
Pro Pro Gly Gln His Leu Leu Gly Asp Gly Lys Ser Cys Ala
20 25 30

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